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JANUARY, 1955

volume 45

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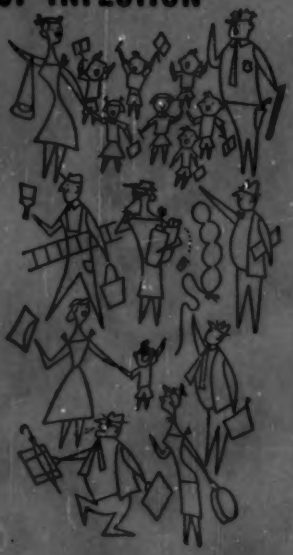

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1 *Klarmann, E. G.; Wright, E. S. and Shtrum, V. A.: Prolongation of the antibacterial potential of disinfected surfaces, Applied Microbiology 1:18 (Jan.) 1953.*

2 *Smith, C. E.: Disinfectants for tuberculosis hygiene, Soap and Sanitary Chemicals 27:133 (Sept.) 1951; 27:115 (Oct.) 1951.*

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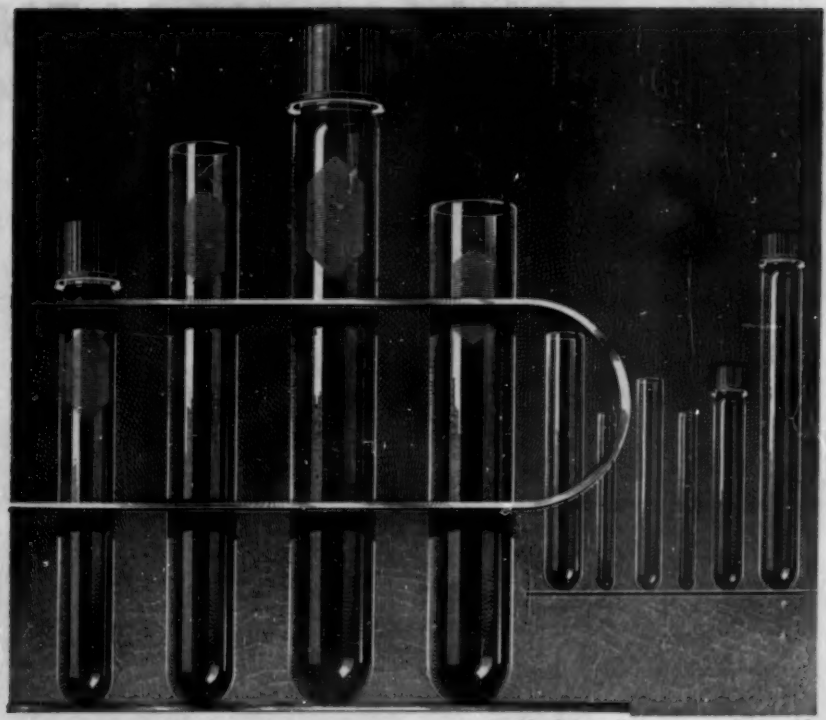

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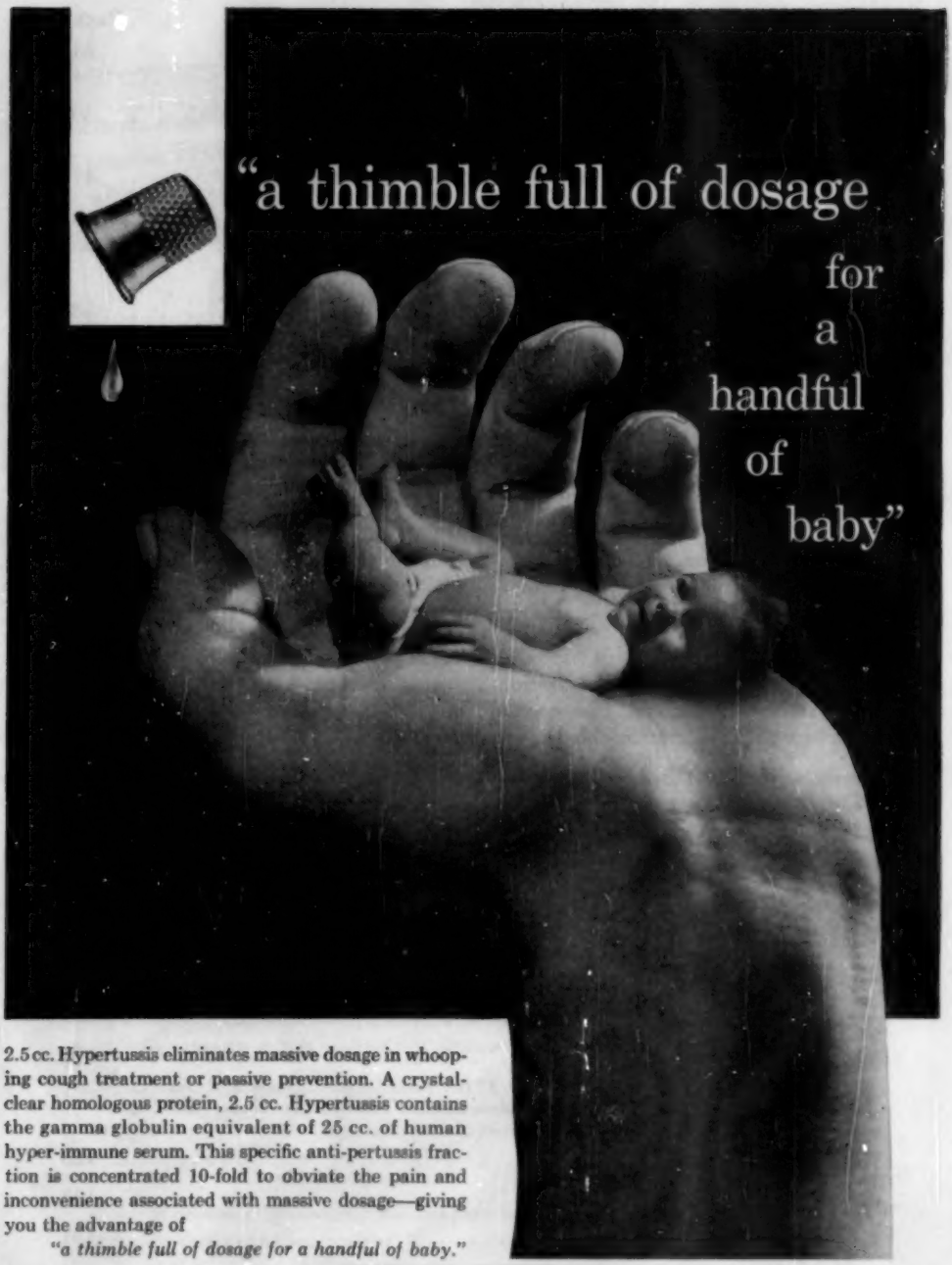

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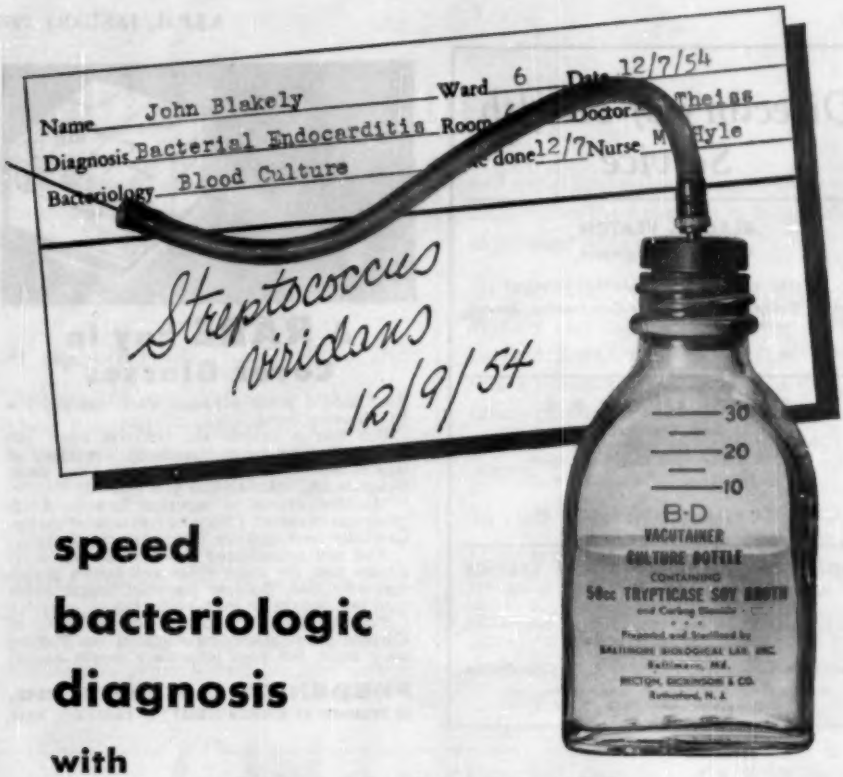

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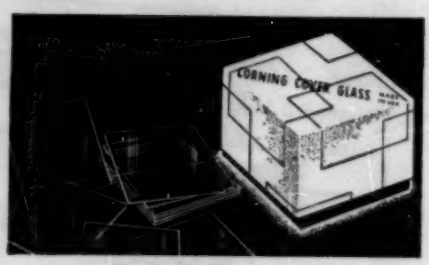

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1. Yow, E. M.; Taylor, F. M.; Hirsch, J.; Frankel, R. A., & Carnes, H. E.: *J. Pediat.* **42**:151, 1953.
2. Dodd, K.: *J. Arkansas M. Soc.* **10**:174, 1954.
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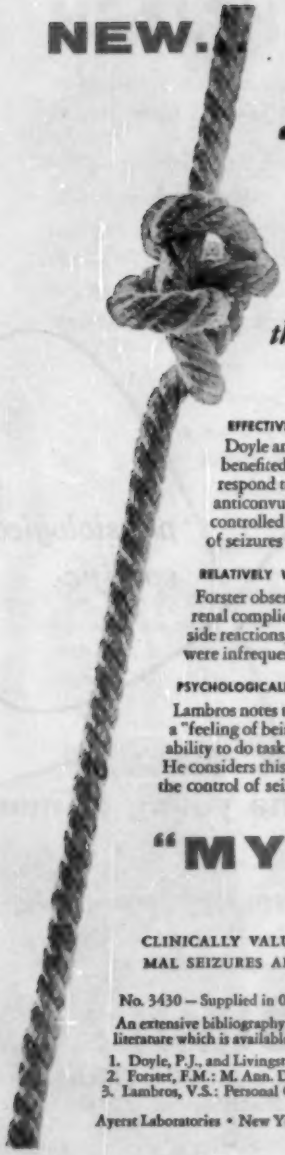

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1. Doyle, P.J., and Livingston, S.: J. Pediat. *43*:413 (Oct.) 1953.
2. Forster, F.M.: M. Ann. District of Columbia *23*:137 (Mar.) 1954.
3. Lambros, V.S.: Personal Communication.

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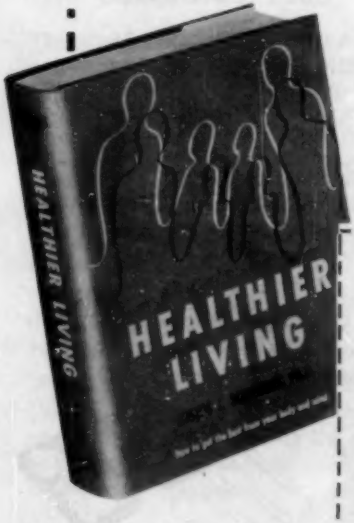

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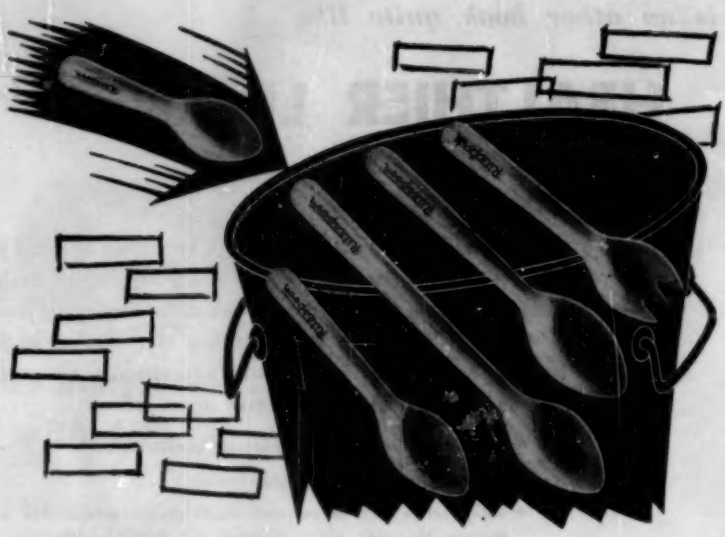

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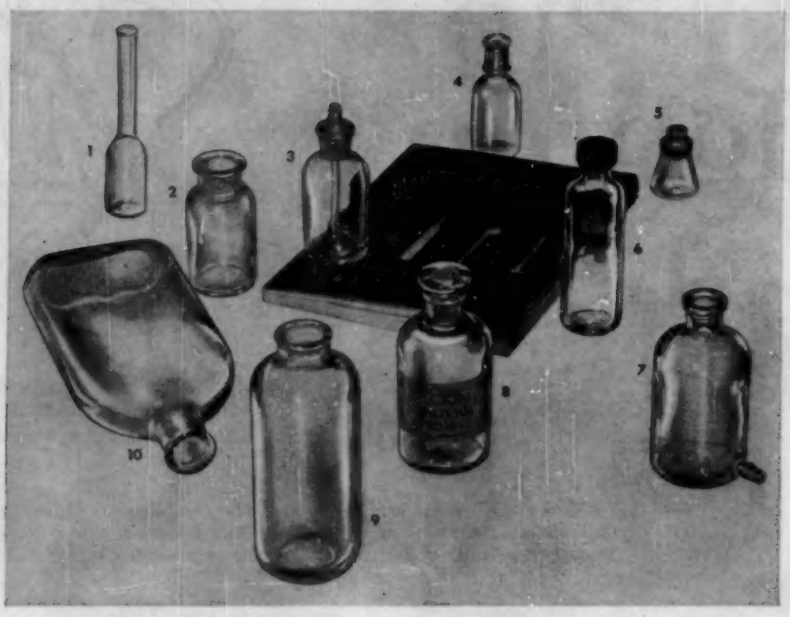

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5. 1620—Specific Gravity, Hubbard-Carmick
6. 635—Milk Dilution, Graduated, With Screw Cap
7. 1220—Aspirator, Outlet for Tubing
8. 1380—Reagent, Lettered, Narrow Mouth, With Flat Head ⅓ Stopper
9. 1260—Centrifuge, Original Form
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By H. C. Schaefer, Director Laboratory Chow Research

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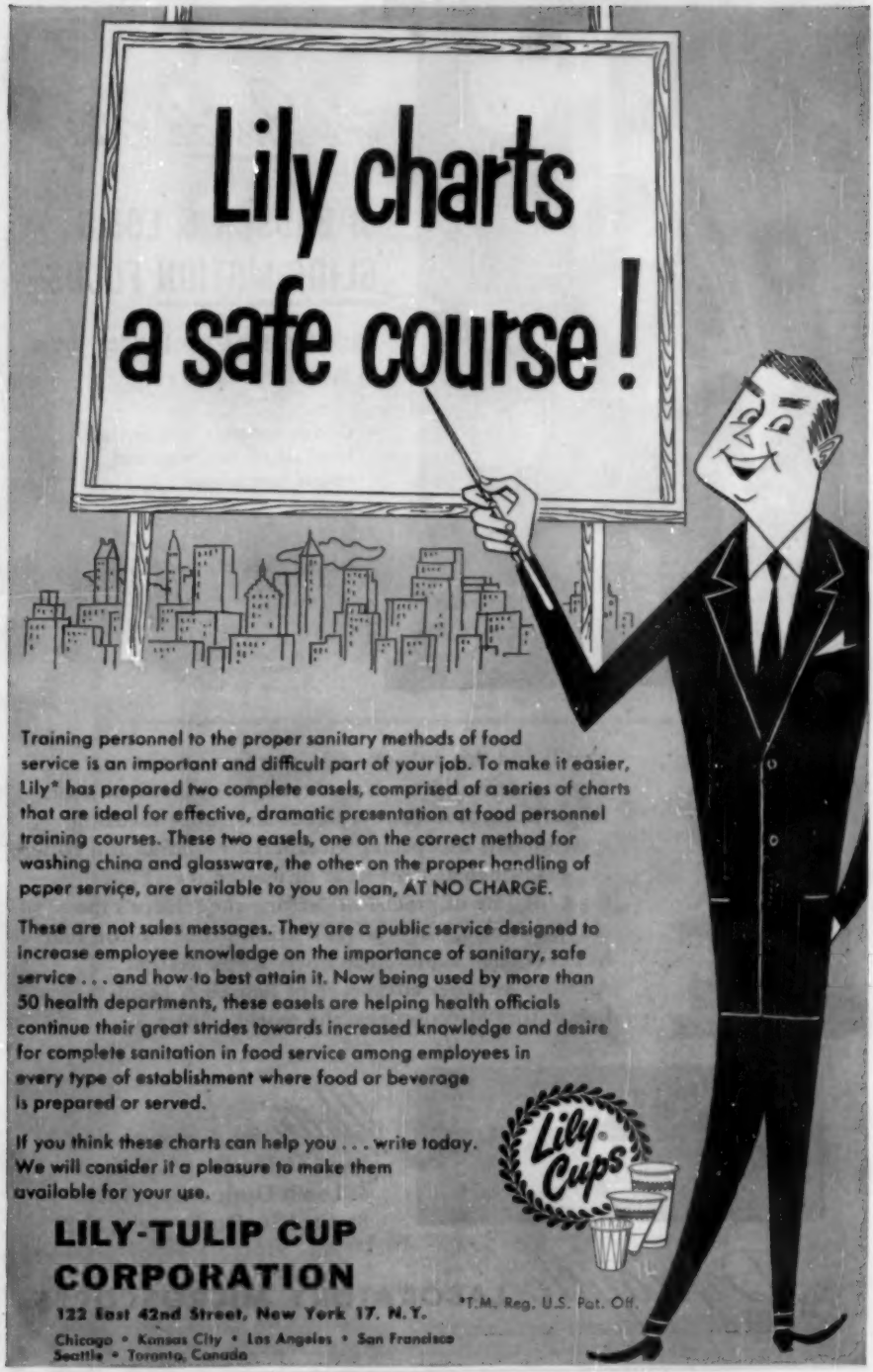

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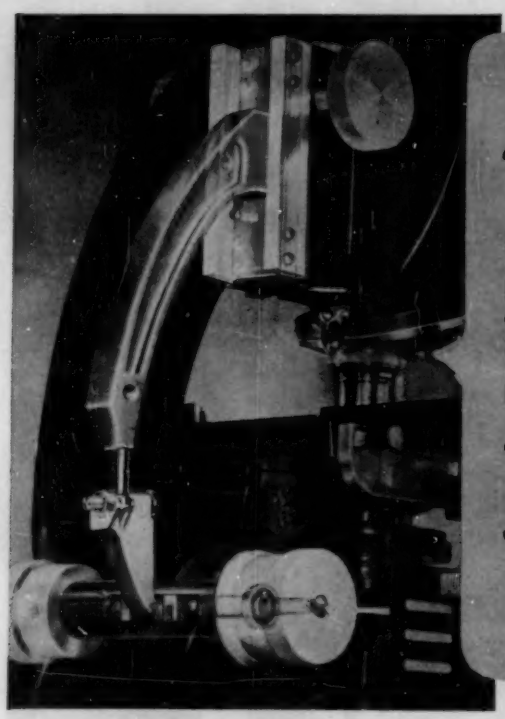

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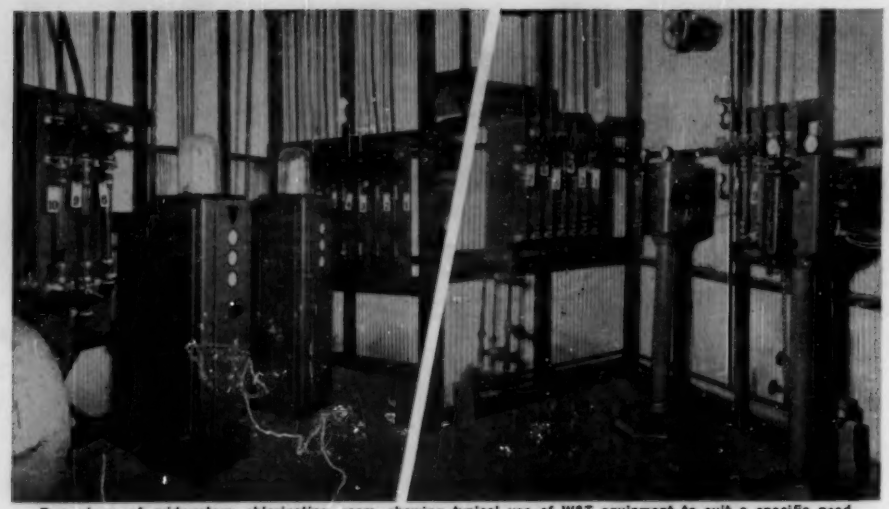

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Suburbanization and Suburbia

COLEMAN WOODBURY, Ph.D.

High points of the recent Buffalo Annual meeting were the two sessions of the Association Symposium, "The Impact of Suburbanization on Public Health." Unhappily, the publishable record does not do justice to the often brilliant and provocative give-and-take of the discussions. We have the good fortune, however, to present in this paper the factual "runway" from which the symposium's flights of argument and opinion "took off."

A traffic engineer whom I know fairly well has a complaint about his profession. He says, in effect: "The chief trouble with being a traffic engineer is that almost everyone else considers himself an expert on the subject, too. A large proportion of the people above 16 years or so drive automobiles more or less regularly. Almost all the others ride in them quite frequently. This makes us a nation of traffic experts. Highway design, traffic control, parking, safety measures—nearly everyone has the answers." "Now," he continues, "many of their ideas are sensible enough; some are very good. Too many of them, however, are just plainly wrong, or at best only partly valid, or are based on misinformation or on conditions that have changed completely. But just try to make most car drivers see that their pet remedies aren't quite the best!"

Many other specialists, of course, could make similar observations about their work. Although the analogy is not close at all points, some rather common conditions and broad trends in our economic, political, and social evolution raise a similar response. Take, for example, the suburbanization trend. A substantial and rapidly increasing proportion of Americans live in suburbs. A large proportion of the others are more or less familiar with one or more suburban communities — they know people who live in them; they drive through them; and they read an occasional magazine or newspaper article about some phase of suburban life. Again, however, many of the widely held notions about suburbs are untrue; many are of limited validity; others reflect conditions of a generation or more ago

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in a sector of our society that is changing very rapidly.

For example, the suburbs today, by and large, are not exclusively nor even primarily high-income areas. They are not limited to the environs of the largest cities. Their physical development is spotty and uneven. Much of it is substandard in important aspects. Dormitory towns are only one species of suburb.

In all truth, reliable and significant facts on suburbanization are not easy to come by. Our ignorance is much more impressive than our knowledge. In this article, I propose to sketch in very broad strokes and necessarily without attention to many significant local and regional variations some of the things that we can say we know about suburbanization and its results and some other things we have good reason to believe are true about them. Although I have selected facts and near-facts that I believe should be of some interest to public health administrators and specialists, I have not tried here to show how or why they may be significant. That clearly would be a much longer and more formidable task.

A Definition

For the purpose of this paper, suburbanization is taken to be the complex and changing process that results in suburbs. Suburbs, in turn, are simply forms of land use and development, together with the concomitant political, economic and social forms and attitudes, that take place relatively near to but outside of sizable cities and that are influenced materially by the economy and ways of life of these central cities. To be sure, the lines of influence flow both ways, but the central city-to-suburb forces are the more significant for purposes of definition.

Obviously this is a rather commonsense, dictionary-type definition. To move from it to a more precise definition that will yield usable statistical and other facts, I must introduce another term—the Standard Metropolitan Area, often indicated as SMA. Several agencies of the federal government that collect and use data on urban centers (including the Bureau of the Census) have agreed upon the definition of SMA and upon its application, i.e., the boundaries of the actual metropolitan areas. This definition is necessarily rather long and somewhat technical.[1] Without serious inaccuracy it may be paraphrased: a Standard Metropolitan Area consists of a central city (or cities located closely together) with a population of 50,000 or more, the remainder of the county in which the central city is located and any contiguous counties that are closely tied in, economically and socially, with the central city and the populations of which are largely nonagricultural. In New England the SMA's are groups of towns, not of counties.

With SMA's already defined and marked out a working definition of the suburbs would be the SMA's excluding the central cities and any agricultural areas in the outlying parts of the counties. Because it is impossible without special breakdowns to take out the data for the agricultural areas, in this discussion our working definition of the suburbs is simply the SMA's minus their central cities. In the aggregate, the agricultural parts of the metropolitan counties are so relatively small in population and in most other measurable characteristics that leaving them in does not invalidate our data.

Facts About SMA's

Before looking more closely at the suburban areas, a few facts about the SMA's may give some clearer sense of scale or perspective. At the time of the latest federal census 168 SMA's had

been marked out. They covered only some 7 per cent of the land area of the country, but accounted for about 56 per cent of the total population. Approximately 85 million people lived in metropolitan areas in 1950—a number not far from the total population of the United States in 1906. In other crude but readily available measures of economic and other social activity the SMA's show the following proportion of the United States totals:

	Per cent
Number of families	57
Number of dwelling units	56
Number of potential voters	58
Number of production workers in manufacturing	71
Number of workers in retail trade	67
Number of employees in wholesale trade	79
Number of active proprietors and employees in personal business and repair services	74 [2]

Probably even more significant is the recent record on population growth. The 1940–1950 decade showed the largest absolute population increase in the nation's history.[3] Approximately 80 per cent of this record increase was found in 1950 in the SMA's.[4]

Because a few spectacularly growing metropolitan areas, mostly in the southwest and along the Pacific coast, have received wide attention in recent years, some persons jump to the conclusion that they are largely responsible for these over-all figures, particularly those on population growth. This simply is not true. Certainly, these are important urban centers. Certainly, they face crucial problems directly traceable to their unusually rapid growth. If, however, the SMA definition had been used in 1900, it would have marked out 52 areas (as against 168 in 1950) with an aggregate population of over 24 million. From 1900 to 1950 the metropolitan population of the country increased by more than 60 million persons. Of this increase, 38.6 million, or more than 64 per cent, went into the 52 SMA's of 1900. In 1900 these 52 areas had 31.7 per cent of the population of the country; in 1950 their proportion was 41.6 per cent. Again, they accounted for 51.7 per cent of the 1900–1950 population increase of the country and for 51.6 per cent of the 1940–1950 increase.[5]

In other words, then, the older SMA's have held their ground remarkably well despite the rise of many vigorous newer areas.

As a related point, some persons have the impression that metropolitan growth is largely attributable to areas of one population size or another. This also is not true. In a recent study, Bogue, one of the leading students of metropolitan population and growth, after a careful analysis, concluded that ". . . with the exception of a general tendency for SMA's of one million inhabitants or more to grow at a slightly less rapid rate than SMA's smaller than this, there has been no pronounced or consistent trend for rates of total metropolitan growth to vary with size, either in the 1940–1950 decade or in any earlier decade." [5]

What do these and similar facts add up to? In short, simply this: these 168 SMA's—central cities and suburbs—are, by almost any measure, major elements in the economy and life of the nation. If some composite index of their influence and importance could be devised and if some clever person could draw a map showing SMA sizes according to this index, that map would be so unlike the land area maps we are accustomed to that we would hardly recognize it. In many respects, however, it would be a more significant map. It would emphasize the location in our present society of many of the greatest resources of men and organization, as well as the locus of many of the most difficult and threatening problems in providing adequate governmental and community

services. Suburbanization, as one of the most prominant characteristics of the metropolitan scene, is related to both the resources and problems sides of the picture.

Suburban Populations

In 1950, 57.7 per cent of the aggregate metropolitan population lived in the central cities, 42.3 per cent in suburban areas. Over the past 30 years or so, however, these proportions have been shifting in favor of the suburban areas. Thus, in the 1940–1950 decade 39.3 per cent of the total metropolitan increase in population was in central cities; 60.7 per cent was in the suburbs. For the preceding decade, 1930–1940, the corresponding proportions were 40.3 per cent in the central cities, 59.7 per cent in suburban areas.[5] The similarity of these proportions in two drastically dissimilar decades suggests that they reflect the operation of some deep-seated forces or motivations of metropolitan populations.

The same trend is indicated by the following rates of aggregate population increase from 1940 to 1950:

	Per cent
United States	14.5
Standard Metropolitan Areas	21.8
Central Cities of SMA's	13.9
Suburban Areas of SMA's	34.7 [5]

Another breakdown of metropolitan population shows a difference that perhaps is even more significant. Bogue and other students divide the suburban areas or rings into two parts: urban rings and rural rings. The urban rings are urban in the definition of the 1940 census, i.e., they consist of incorporated places of 2,500 population or more. Rural rings are the remainder of the suburban areas. They are made up primarily of people living in incorporated places of less than 2,500 population and of people in unincorporated areas. The latter may be in a fairly dense or at least "nucleated" settlement, or they may be scattered more widely—in what is sometimes called a "rurban" development. In either event, the population of rural rings is within metropolitan areas, but is without the usual municipal organization and its services—except to the degree, usually small, that counties or townships (or states) may supply those services.

In 1950 the total populations of the urban and rural rings were almost the same. The suburban areas had 42.3 per cent of the total metropolitan population; the urban rings had 21.2 per cent; and the rural rings 21.1 per cent.[5] In other words, both urban and rural rings had aggregate populations of over 18 million each.

As was just pointed out, the suburban areas of SMA's increased 34.7 per cent in population from 1940 to 1950. The urban rings, however, increased 29.2 per cent, and the rural rings 40.8 per cent. Without loading in too many figures and percentages another comparison is pertinent. Some 80 per cent of the 1940–1950 population increase of the United States was in metropolitan areas; almost 50 per cent was in suburban areas; more than 21 per cent was in the urban rings; and more than 27 per cent was in the rural rings.[5]

In short, of the record-breaking population increase of the 1940's in this country, more than one person out of every four was living in 1950 in the governmentally unorganized (or underorganized), less densely settled and least urban parts of the metropolitan areas. These parts, the rural rings, had less than one-tenth of the country's population in 1940, but they got more than one-fourth of the population increase of the following decade.

Useful as census data on gross population and population increases may be, they can indicate or suggest only part of the story. What about possible differences in income status and other

characteristics of metropolitan and suburban populations? What about the attitudes and other sociopsychological aspects of the various groups and classes of metropolitan populations? Is suburbanization helping to destroy any sense of community in metropolitan centers? Are suburbanites on the whole more alert and active in the political and civic life of their areas than are residents of central cities? In these respects is there any significant difference between the urban and rural rings?

On these and many similar questions we have to face at least three facts: (1) On many important questions of this kind we know very little if anything. (2) On many others we definitely pass from the realm of established fact to the area of quasi-fact—of what we have some but not conclusive reasons for believing. (3) In respect to the latter, it is impossible to summarize much of the evidence in a paper of this scope. I am forced, therefore, to treat some of these crucial questions in rather abrupt and apparently dogmatic fashion. Back of these generalized statements, however, is some evidence. And all of them are tentative and subject to modification and change.

On the economic status of suburbanites census figures on the nonwhite population are pertinent. For the United States the 1940–1950 rate of increase of nonwhites (most of whom, of course, are Negroes) was higher than for whites, but not markedly so. For suburban areas the nonwhite rate of increase was lower, but not markedly so. For the central cities of SMA's, however, the difference was great:

		Per cent
Central cities increase		13.9
" " "	—white	10.1
" " "	—nonwhite	48.3 [6]

A large proportion of Negroes and other nonwhites are in the lower income brackets. As they migrate to metropolitan centers, most of them go to the central cities. There they find settlements of others of their race and cheap, and often poor housing. There, as members of a large labor pool, they often have better chances of picking up jobs that are open to inexperienced and largely unskilled urban workers. One result is that in some central cities the blighted and slum areas, which usually have decreased in population during times of reasonably full employment, more recently have been among the most rapidly growing districts.[7] Other fragments of evidence indicate that, while the suburbs have been attracting more and more middle and lower middle income families, probably the central cities' proportions of people in the lowest income brackets—Negroes, other recent migrants, old people, those physically handicapped—have been increasing.

Closely related is the age distribution of suburbanites. Many of the newer residents of suburban areas are families with young children—those still living with their parents. To the extent that suburban migrants are concentrated in these age groups the central cities' proportion of smaller families—young couples without children and older couples whose children are out on their own—increase.

One or two sample studies indicate that most suburbanites come from the central cities, frequently in a series of hops. That is, they may move from an older to a newer part of the central city, from it to a close-in suburb, and from there to an outlying urban area.[8] The pattern of metropolitan migration undoubtedly is complex and one should beware of too easy generalizations. It is reasonably clear, however, that many suburban residents have previously lived in a central city and have reached their present address as a result of more than one move. Also, some unknown but probably substantial proportion of them, particularly of the younger

couples, are more or less expecting to move again.

What are they looking for? Probably, in essence, they are seeking rather simple, elementary things—open space, less noise and confusion, cleanliness, better surroundings for their children, and more varied ways to spend increased amounts of leisure time.[8, 9] Undoubtedly, more complex motivations also exist. Outright snobbery is one of these. They wish to get away from "that kind of people." Some suburban addresses still carry prestige in many circles. Possibly some suburbanites are getting away from the—for them—rather overpowering scale of central city environment, both physical and institutional. To some degree (no one knows what degree but Bogue thinks it is small) they may be influenced by the atomic and hydrogen bombs. My own estimate, from the very inadequate evidence at hand, is that the essentially simple conditions of decent family living are the most powerful magnet. I am also impressed by the finding of one or two sample studies that most of even the rurban or rural ring suburbanites are not "going back to the farm." Their present level of public and community services may be low, but they expect them to be increased to essentially urban levels in the fairly near future.[8]

Are most suburbanites reasonably satisfied with their present conditions and ways of life? Quite probably, the answer is "yes."[8-10] Are many of them likely to retrace their steps to the central cities? Quite probably, the answer is "no"—at least not for some time to come. Is there a backlog of prospective suburbanites? Do suburban living conditions still attract non-suburbanites? Quite surely, the answer is "yes."[11]

Housing

As the population figures suggest, the SMA's and their suburban areas are accounting for large proportions of new housing construction. In 1953, for example, 1,103,800 nonfarm dwelling units were started. Of this substantial volume, 803,500 units, or 72.8 per cent, were in the SMA's. Of the SMA total, 539,800 units, or 67.2 per cent, were in suburban areas.[12]

Although better living conditions and more ready availability of new housing undoubtedly are strong factors in suburban growth, much recent suburban housing leaves much to be desired. Its defects fall largely into three categories: (1) poor location; (2) inadequate size; and (3) inadequate facilities, particularly for water supply and waste disposal.

Poor location is hard to measure accurately or to generalize about. Roughly speaking, however, it is of two kinds. The first is what the British call "urban sprawl"—the planless extension of urban building on and on into the countryside with little or inadequate attention to community facilities and services, topography, future transit and transport problems, etc. The other is a similarly planless scattering of individual houses or small groups whenever pieces of land can be bought quickly and cheaply.

Inadequate floor space is an equally serious matter. After careful studies, the Committee on the Hygiene of Housing of the APHA concluded that a reasonable minimum standard of housing space for a family of four persons is about 1,150 square feet.[13] For the same year in which the committee's report was prepared, 1949, a sample study of sales housing in 15 major metropolitan areas in all sections of the country showed that approximately 79 per cent of the new single family houses were below this minimum. For 1950 the proportion was 73 per cent; for 1951 it was 65 per cent.[14]

As to sewage disposal, the same study found that in 1949 the proportions of

new houses with individual disposal systems ranged from 3 per cent to 95 per cent. The highest proportions were in the Miami area, 95 per cent; Seattle area, 51 per cent; New York area, 50 per cent; Boston area, 49 per cent; and Atlanta area, 44 per cent. In respect to water supply the picture was better. The proportions of new houses with individual supply systems ran from none to 15 per cent. Unlike the smallness of housing units, which may be improved somewhat as the sharpness of the housing shortage is blunted, the proportion of newly built suburban houses with doubtful or poor water supply and sewage disposal systems seems likely to increase rather than to decrease as the building boom goes ahead.

Industrial and Commercial Development

Unsatisfactory as are our data on population and housing in suburban areas, those on industrial and commercial (retail, wholesale, and office space) development are even poorer. For industrial development, measured by number of production workers in manufacturing, we have fairly good data from the Census of Manufactures for the period from 1899 to 1947. For the crucially important postwar II period, only a few individual area studies are available.

The census data for the period to 1947 show a slow decline in the proportions of production workers in central cities of 100,000 population or more in 1929 —a decline of about six percentage points in 48 years.[15] This has been matched by an almost equal increase, about five percentage points, in the proportion of such production workers in plants in suburban parts of the same metropolitan areas. The scattered postwar II studies suggest that this slow shift may have been speeded up greatly, but they are far from conclusive. Some evidence indicates that the suburbanization of manufacturing industries may be quite largely in the form of extensions and branch plants of larger, well established corporations; while much of the growth in central cities may be among newer, smaller enterprises attracted by cheap rents in old buildings and by large labor pools on which they can draw more or less as they wish.[15] If, or to the degree that this may be true, suburban areas may be acquiring an increasing proportion of the more stable and probably better paying industries, just as in population growth they are attracting families in their most productive stages, economically and biologically.

Although similar analyses on retail trade are even less conclusive, a fair guess would be that it, too, is being suburbanized, probably in recent years at a considerably faster rate than industrial employment.[16] The burgeoning shopping centers in outlying sections of metropolitan areas are part of this process. Even office space, once considered the central district use par excellence, shows signs here and there of a shift—particularly in some of the older and more congested metropolitan areas.[17] These signs, however, do not yet indicate a general movement, let alone a trend.

Government Structure and Finance

One of the most distressing features of metropolitan areas is the hodgepodge of their governmental units—typically a Balkanization or splintering of the area among municipalities, townships or towns and counties, plus a bewildering overlay of special districts. In 1952 the 168 SMA's had 16,210 units of local government of which 3,164 were municipalities; 2,328 were townships; 256 counties; 2,598 special districts; and 7,864 were school districts. Eleven SMA's had more than 250 local

governments apiece. No similar tabulation is available for suburban areas alone, but clearly they account for a large share of the metropolitan totals.[18]

In proportion to population, the very large SMA's are not the worst contributors to this mess. The five SMA's with central cities of 1,000,000, or more, had in 1950 a total population of about 29,500,000 and 3,386 units of local government. The 77 SMA's with central cities of from 50,000 to 100,000 had an aggregate population of only 11,600,000 but 4,783 local government units.[18]

Within rather wide limits, numbers of local governments, per se, need not cause grave concern. When, however, numbers are an index of splintering, confusion, group and class animosity, and failure of any public authority to appreciate, let alone to deal with, the burgeoning problems of suburbanization, then the situation is serious. That is the situation today in a large proportion of metropolitan areas.

Quite probably low tax rates have been a lesser factor in suburbanization than has commonly been assumed. At least in the few sample studies of reasons behind moves to the suburbs it has not been high on the composite lists. It, however, may well be looked upon by many recent suburbanites as a kind of "extra dividend"—not necessary but very acceptable. If so, many of them seem bound to be disappointed. The gap between central city and suburban tax rates has been closing rapidly in many metropolitan areas.[19] And many suburban communities are far from their goals in the most costly local public service—schools. This is particularly true of the newer, more rapidly growing suburbs. Besides, many of the older ones have arrearages to make up in dealing with traffic congestion, parking, play grounds, and other public facilities. Belated recognition of the transitory nature of many low suburban tax rates has aggravated moves to keep low priced houses out of many suburban communities.

It is argued that residential areas of this kind do not yield enough in taxes to meet the public expenditures they require. This is true enough. To only a lesser degree is it also true of most other residential districts. The argument also overlooks the fact that in many communities the aggregate purchasing power of the residents of these inexpensive houses helps materially in raising the tax-paying ability of commercial districts which usually show a neat "tax surplus." Be that as it may, the growing acceptance of this "tax deficit" argument is strengthening the already strong set of forces making for the splintering of suburban governments, as well as those scattering low-income houses over the rural parts of metropolitan areas.

This is only one instance of the short-sighted response of many suburban communities to their growing financial troubles. Another example is the adoption of new forms of service fees and taxes—many of them regressive and expensive to collect. Beyond these, however, are three lines of attack that are beginning to be explored: (1) reorganization of local government structure in metropolitan areas, possibly in some federal pattern; (2) more knowledge about the sizes and densities of urban localities that make for the most efficient or optimum provision of public services; and (3) more reliance on grants-in-aid and shared taxes from state and federal governments whose tax systems can tap revenue sources more effectively and more fairly. As these and other possible remedies are being examined, more people are coming to realize that suburban financial problems and those of the central cities are made essentially of the same cloth. It is almost impossible to deal effectively with one without affecting the other. This truth is underscored by Hawley's little known but

pioneering study. It reached the conclusion, among others, ". . . that the municipal government costs of metropolitan centers vary with the sizes of their satellite populations." [20]

Whither Are We Drifting?

In partial summary of this necessarily descriptive and rather loose-jointed article, I now try to say what I believe may happen to suburban communities in the near future if present trends continue. On many points it is not my opinion of what ought to happen or what by intelligent public policy and planning might be made to happen.

The population trends in metropolitan areas seem well established, for the short term at least. They seem likely to gain in momentum. Suburbanization will continue. Its most extreme form—growth in the rural rings—will become more rather than less significant. Commercial and industrial suburbanization also will continue—the former possibly more rapidly than the latter.

The selective character of metropolitan population movements will be maintained in the near future. The central cities will become increasingly the place of residence of new arrivals in the metropolitan areas, of nonwhites, lower income workers, younger couples, and the elderly. The suburbs will become even more the residence of middle-income families and of those of the better paid workers, particularly those families in the middle stages of the family cycle.

As the housing boom tapers or falls off, it will result in somewhat larger and better built houses. Some part of the postwar rash of too small houses will become one of the newer kinds of blighted areas or slums. Proper facilities for water supply and sewage disposal will become increasingly serious problems. More intelligent discussion of local government problems may develop slowly but for some time at least it will lack the vigor to break through the traditional and sociopsychological barriers to effective remedial action.

Socially and psychologically both the metropolitan and the suburban bodies politic will remain split up into groups and classes unable to communicate effectively, mutually suspicious, incapable of defining their common interests, or of cooperating to realize them. Quite possibly an increasing number of people will see that suburbanization over the longer term is not an effective way to run away from the problems of modern urban life. Sooner or later most of the old problems show up again in one form or another and are often accompanied by other difficulties. Recognizing these facts may open the way for plans, policies, and action to steer most kinds of suburbanization away from their present difficulties and toward more generally satisfactory forms of physical and social development.

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Journal 25 Years Ago

Perhaps nothing so well illustrates how the world has moved scientifically as the following statement taken from an article "Air Travel and Public Health" by Frederick L. Hoffman, LL.D., in the Journal of October, 1930. He suggests the use of air facilities in reaching Fort Worth, the scene of the 59th Annual Meeting of the Association. In citing the beneficial effects of air travel along with its saving of time, the author says, ". . . From Birmingham, Ala., the Delta Air Service makes the trip to Fort Worth in 2 days of about 4 hours flying each day at a cost of $46. This is a wonderful trip full of interesting views. A short journey can be made from Tulsa, Okla., to Fort Worth, Tex., in about 4 hours at a cost of $17. . . .Leaving Fort Worth at 8:55 in the morning, arriving at Brownsville at 3:45 in the afternoon, leaving Brownsville next day at 8:15 in the morning one arrives at Mexico City at 1:45 p.m."

The present flying time from Birmingham to Fort Worth is two and a half hours, the fare is $42.60; from Fort Worth to Mexico City takes five and a half hours with one stop and a fare of $68.10; from Dallas to Mexico City nonstop takes four and a half hours.

But one item in the article indicates a point of view that is even more true today than a quarter of a century ago, namely, the need to know and understand the activities going on among our neighbor Latin American countries. Says Dr. Hoffman, "Modern Mexico will astonish Americans who have never visited it. The developments in public health service during recent years have largely followed American lines of procedure. The new building of the Public Health Service in Mexico has nothing in America to outmatch it. The health officials are men of high standing in their profession, while everywhere one may meet physicians and surgeons of outstanding qualifications. There are some very admirable clinics in Mexico City worthy of a visit, while the historical attractions of the city and other parts of Mexico offer no end of opportunities, arousing the imagination and giving delight to the mind of searchers of the picturesque."

The Role of the Vital Statistician in the Community as Evolved by W. Thurber Fales

LOWELL J. REED, Ph.D., F.A.P.H.A.

This is the first W. Thurber Fales Lecture. It is a warm but revealing biographical tribute of such wide appeal that many among us, and in all our various disciplines, will be indebted not only to the author but to the loyal group who planned and brought to fruition this memorial lecture series.

I have the privilege of presenting the first lecture in a series that will be devoted to the memory of W. Thurber Fales. It is a privilege that I deeply appreciate because of my long association with Dr. Fales and my great regard for him. I am going to devote my talk to a consideration of Fales's concept of the role of the vital statistician in the community, as this concept developed throughout his life. His perception with regard to the potentialities of this post in service to the community, as well as in personal satisfaction, may prove to be his greatest contribution to his chosen field.

I shall approach the subject by a review of some of Fales's specific activities with which I am well acquainted rather than through a general discussion. The fact that he was a student of mine some thirty years ago and that in the subsequent years he and I worked as a team on many enterprises has given me real insight into some of his concepts. I am sure that he did not start his statistical career with these views fully organized, but I know also that toward the end of his career he had developed out of his own working experience, specific ideas as to what a vital statistician could mean to the community within which he lived and worked. If I can give you in my talk some impression of his vision, I shall have succeeded in what I wish to do.

Fales was one of that rather small group of men who obtained a new point of view with regard to public health, through the course leading to the certificate in public health offered for a short time at the Massachusetts Institute of Technology. The uniqueness of this educational effort is best reflected by the lives of the men who received this training, and by their outstanding contributions to the health programs of this country. The experience made a deep impression on Fales, for it was there that he saw public health, not as tax-supported health activities, but as the health of the public, in the broadest sense.

Through work on a sanitary survey of Framingham, Fales met Wade Hampton Frost, and in 1920 he came to the Hopkins School of Hygiene and Public Health as instructor and graduate student in epidemiology. He was the first student in the school to receive the degree of Doctor of Science with a major in epidemiology. Those of you who have had the privilege of being students of Dr. Frost's have an appreciation of what this experience meant for Fales's development. However, I should like to

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emphasize that he entered this period of training with an unusually broad concept of the scope of public health, through his previous contact with the staff at the Massachusetts Institute of Technology.

I first met Fales when he came to the School of Hygiene, and I enjoyed that relationship between teacher and student that can mean so much to both. It is interesting to recall that he showed at that time habits of work that stayed with him throughout life. His desk and brief case appeared to an observer to be a shambles, but when some point came up in the discussion requiring a particular paper, Fales would squirrel down into the heap and come up with it without any visible hesitation. Many of you have had occasion to be impressed by his remarkable visual memory that not only made it possible for him to use such a unique filing system, but also enabled him to store within his mind a wealth of statistical material in such a form that he could pull out the right bit of information at the right time.

After completing his work at the school, Fales went to Alabama as director of the Bureau of Vital Statistics. I shall not attempt to review his work there except to call attention to certain things responsible for its success. Fales recognized from the outset the importance of the registration of vital facts for the use of the individual, and at the same time he understood the way in which registered facts could be developed into a useful body of vital statistics. He brought to this second phase of the work a mind that was gifted in the problem of classification and thus brought a fresh approach to an old problem.

In 1934, Fales returned to Baltimore as a member of the Statistics Section of the City Health Department, later becoming its director, a post that he held until his death. Dr. Huntington Williams had discussed possible candidates for the opening in the department with Dr. Frost and me, and Dr. Fales also explored with us the potentialities of the position when it was offered him, for he saw the unusual opportunity ahead if it were possible for him to develop working relationships with the School of Hygiene. He came to the city, therefore, with an informal understanding that such cooperation would be developed, and his subsequent career illustrates the mutual benefits that can follow from a cooperative program between a city health department and a school of public health.

In the early days in Baltimore Fales was struggling to clarify the field of action of the vital statistician in a broad sense, and we had many talks on the subject. He saw very clearly the registrar function and its value to the individual citizen. He saw the place of vital statistics in developing and extending our knowledge of disease, both from the clinical and the epidemiological point of view. He appreciated the administrative use of vital statistics and the responsibility of the statistician for supplying the health officer with current statistical information bearing on the conduct of the health department. But he also had the idea that vital statistics were vital and had relationship to such varied social programs as education, traffic provisions, housing, policing, and recreation. I remember that our discussions led to the conclusion that he was developing himself as a demographer, not in an academic sense, but as a practicing demographer; a man who took the specific demographic information that he had for his community and brought it to bear on all of the community problems.

It was this concept that led him to obtain population tabulations for the City of Baltimore on the basis of enumeration districts and for the census of 1940 to work with the Bureau of the Census in the development of enumera-

tion districts that could most easily be correlated with those subareas that a city uses for administrative purposes, such as school districts, police districts, voting districts, health districts, and so on.

It took Fales some time to get this material into shape and to correlate it in a working fashion with the flow of births and deaths, the tabulation of which was the primary task of his division. When he once had this information, however, he was the demographer for the city, not through anyone giving him that title, but from the sheer force of the fact that he knew more about the population of Baltimore than anyone else. His real position in this field developed solely from working contacts. More and more people in various parts of the city government, and in social activities carried on under private auspices, came to know that Fales had information of value to them. He was completely unselfish in his approach to these situations, and not only supplied these people with the demographic material which they sought, but he worked with them in order that these data might obtain their greatest usefulness. I have seen many instances of reports and activities completely changed in form and direction through such working contact with Fales. As he became better known, an appreciation of his value to the city developed throughout the city administration. At one time he was approached with the proposition that he become city statistician. It is mainly of importance to recall this episode because of his reason for rejecting this line of development. He felt that his effectiveness as an informal city statistician came from the fact that he had his fingers on the flow of vital material and that a close grasp on the knowledge of the population and its ebb and flow in terms of births and deaths was essential.

I should like to make this phase of Fales's career stand out a little more clearly by speaking of specific programs. On one occasion a number of years ago, when the school department had fallen seriously behind in its building program, the Board of Education presented to the city a report calling for the rehabilitation of the school system through the spending of a great many millions of dollars. This recommendation faced the hard sledding that any such report encounters, and favorable action was blocked when a city councilman, thoroughly acquainted with the details of his own district, asked the school superintendent how he knew that a school of the proposed size was to be needed in that particular section. The report did not contain demographic information, and no answer could be given to the question. Within the next year the Department of Education got in touch with Fales. As a result, the report was completely rewritten and described for the separate districts the current school needs, but what was more important for the problem, it also developed, through knowledge of the population and its changes, a school planning program for the future that could be well defended.

Another activity in which Fales, in his quiet way, contributed to a major extent was the work of the Medical Care Committee of the State Planning Commission. He worked with this committee from the time of its organization but became most active when the subcommittee to review the medical care needs of the City of Baltimore was formed, with Fales as executive secretary and me as chairman. Before we called a meeting of the committee, Fales prepared an outline of the issues that would have to come up for consideration. After the experience of the subsequent years, I am sure he would have introduced some changes in this outline, but his first draft is an interesting document in showing the breadth of his approach

to the problem and the orderliness of his thinking. I am going to read the major headings so that you may appreciate his approach, and include in an appendix to this paper the full outline. The major topics were:

Population
Estimates of illness
Facilities for medical care
Distribution of sickness load
Adequacy or inadequacy of facilities to meet needs
Financial problems involved
Some outstanding medical problems
Possible solutions.

As the work of the committee developed, we built up a systematic set of facts bearing on the broad problem of medical care. We intended to publish a volume containing our statistical material, but this was not completed because Fales and I both became heavily engaged in consultant work in connection with the war and later intensely occupied with work on the President's Commission on the Health Needs of the Nation. It is now unnecessary to do so, for most of our ideas and many of our statistical facts are included in Volume IV, the statistical report of the President's Commission. I am more concerned here with Fales's work on the problem, and this is illustrated by many of the memoranda in my file of the work of the Baltimore committee. To keep the committee from being swamped with statistical material, Fales prepared digests from time to time. I shall include in the appendix one of these digests, for it is only through detailed examination of the material that you can appreciate Fales's effectiveness in this line of work.

Fales and I worked as a team on more enterprises of this nature than I can remember. As I looked through my files in connection with the present review, records of activities turned up that I had completely forgotten. One of these was the report we prepared for the Surgeon General of the Navy during the war. This document was not generally distributed, although it actually has general application. In it we tried to show how vital statistics can come alive in the administration of large affairs. It contains many ideas with regard to the place of the statistician in operations.

Another joint endeavor that gave both of us great satisfaction was working on the committee appointed by the Surgeon General of the Public Health Service to deal with the questions of classification arising from a consideration of joint causes of death. It was out of the work of this committee, assisted by consultants from other nations, that the present international list of causes of morbidity and mortality was developed. Fales showed his uniqueness in this work, for he not only contributed through his great knowledge of the subject, but his spirit of cooperation and the friendly way in which he worked with everyone were major factors in helping the committee to resolve differences of opinion that at times rose to such heights as to threaten the enterprise itself.

My last working contact with Fales was in connection with the activities of the President's Commission on Health, which I mentioned earlier. Here we enjoyed to the full that spirit of teamwork that had given us both so much satisfaction over the years. Although he was suffering at the time from the malady that caused his death, he worked as intensely as ever and drove himself without sparing. His contributions to this activity, as with so many of the things he did throughout life, were made in such a way that he will never be given the appropriate amount of credit.

I have given this discussion of some of Fales's work, as I saw it firsthand, in the hope that I might make it clear to you that he had a broad but very real and specific idea as to what a city vital statistician might be. He interested himself in a very wide variety of social problems, and although he engaged in

activities at the city, state, national, and international level, he always held clearly in his mind that the force of his contribution to the problem came from his knowledge of vital statistics and from his ability to apply this knowledge to the problem at hand. I feel sure that any trained vital statistician who can get his concept of the power that comes from knowing more about the population and its flow of births, deaths, and migration than anyone else in the area can carve out for himself a career as interesting and valuable as Fales's.

The qualities of mind and character which helped Fales to realize so fully the potentialities of this concept in his own career were described by his colleagues at the Hopkins School of Hygiene in a minute prepared at the time of his death. I am going to close my rather personal account of Fales's work by quoting from this minute.

> Dr. Fales became known the world over for his mastery of the strengths and weaknesses of routine record-keeping systems, of the classifications of causes of mortality and morbidity, and of the role which a bureau of vital statistics should play in planning for the future development of a community. He combined outstanding ability as an administrator of an operating agency with a great fund of knowledge and experience, and a continued activity in research.
>
> As a colleague he was modest and cheerful; he could scarcely bring himself to say an unkind word about anyone, and if something critical or derogatory had to be said, Dr. Fales would express himself with the greatest delicacy. He was the kind of man to whom people turn for help and advice, and he gave this generously even when under a heavy pressure of work.

APPENDIX

Outline for Study of Medical Care Situation in Baltimore City

A. Population
  - Composition
    - Race, age, income, size of family, geographic distribution
  - Trends
    - Changing age composition—increase in persons over 65
    - Increase in Negro component

B. Estimates of Illness
  - Amount and distribution
    - Race, sex, age, income
    - Causes of illness and disability
    - Geographic distribution
  - Source of data—Eastern Health District studies, other studies
  - Selective Service examinations

C. Facilities for Medical Care
  - Physicians
    - Number and distribution
    - General practitioners—specialists
    - Trend
  - Dispensaries—outpatient departments
    - General and special
  - Health Department clinics
    - Venereal disease—tuberculosis
    - Prenatal—well baby clinics
    - Immunization clinics
  - Other health clinics
    - Babies' Milk Fund
    - Industrial
  - Hospitals
    - Public
      - Baltimore City Hospitals
      - Sydenham
    - Private
      - General—special
      - Full-paid, part-paid, ward
  - Laboratory and x-ray facilities, etc.

D. Distribution of Sickness Load

E. Adequacy or Inadequacy of Facilities to Meet Needs

F. Financial Problems Involved
  - Costs of services
  - Individual
  - Institutions
  - Public participation
  - Hospital insurance

G. Some Outstanding Medical Problems
  - Domiciliary care
  - Dental care
  - Convalescent care
    - Home
    - Institutional
  - Correction of remedial defects
  - Treatment of chronic syphilis
  - Hospitalization and home care of chronics

H. Possible Solutions

High Spots of Factual Data

Population

Baltimore—stable community—moderate growth—no boom

Racial composition: 19.3 per cent Negro

Can expect proportion of Negroes to increase gradually. Educational opportunities in city better for Negroes than in rural areas.

Geographical distribution: Central area of city around downtown commercial district characterized by high population densities, substandard housing, low economic status, high and increasing percentage of Negro population.
Total population decreasing for most part.

Outlying section—characterized by low densities, population growth, steep.

City made up of many population aggregates or neighborhoods, often with own shopping center.

Age composition: Population older—Proportion over 45 years of age increased from 20.5 per cent in 1910 to 26.5 per cent in 1940. Proportion over 65 years increased from 4.2 per cent in 1910 to 6.8 per cent in 1940.

Aging more pronounced for white than Negroes.

Percentage of population over 45 years

	White	Negro
1910	17.7	18.0
1940	25.5	21.3

Family composition:

230,000 families in Baltimore

70 per cent are natural family—husband and wife, with or without children

14 per cent, either wife or husband dead

Families with father dead four times as frequent as those with mother dead

11 per cent of Negro families have female head

Income distribution—prewar

Distribution of income of wage earning population similar to that for cities with 100,000–1,500,000 population.

Per cent of families with less than specified income

Income less than	Baltimore * (1940 Census)			Cities 100,000–1,500,000 population (1936 Nat. Res. Sources)		
	T	W	C	T	W	C
$2,000	67.3	62.5	90.5	66.5	63.2	93.6
2,500	79.5	76.1	95.1	78.9	76.3	97.9
3,000	86.5	84.3	97.2	86.0	84.3	98.9
5,000	96.5	95.9	99.5	95.4	94.6	99.0

* Note: Based on 184,080 families of which 176,040 families had wage or salary workers only. Excludes 40,360 families with no wage or salary income, 21,460 of these had no person in labor force. The head of family in 10,830 of these was in professional, semi-professional, or proprietor class.

Income level varies with economic conditions—Proportion of families with income under $2,000 always large.

Estimates of sickness

Amount of illness depends on definition

Broadly any departure from well being

Nondisabling—disabling illnesses

Ambulatory cases—bed cases—hospital cases—institutional cases.

Estimates can be made only from population surveys—not from physician's or hospital records

C.C.M.C. studies—Eastern Health District Morbidity Study

Amount depends upon frequency of visiting.

Estimates of illness in Baltimore

All illnesses—1 case per person per year

General Facts

A. Cases of illness in Baltimore

Roughly there are 1,000,000 cases of illness in Baltimore each year. This is equivalent to one illness per person per year.

One-half of these illnesses are disabling, i.e., prevent the person from carrying on his usual activity.

One-half of these illnesses are nondisabling.

The incidence of illness is greatest in the very young; lowest during adolescence; increases rapidly after 40 years of age.

Except during the first few years of life sickness rates are higher for females than for males.

Roughly two-fifths of all illness and of disabling illness are due to minor respiratory diseases.

Chronic disease is present in persons of both sexes at all ages, but increases in proportion after the age of 30.

Twenty per cent of the population over 40 years of age have a known chronic disease. Among persons 60 years of age or over, from 40 to 60 per cent suffer from a chronic disease.

B. Days of illness

Disabled sick days

There are 15 disabled sick days per person per year or on the average every person in Baltimore is unable to pursue his usual activities for 15 days each year because of sickness.

One-third of these are accounted for by persons disabled throughout the year.

Bed sick days

5 sick days per person per year are spent in bed.

1 sick day per year spent in hospital

1 sick day per year spent in an institution

3 sick days per year spent in bed at home

Sick days due to chronic disease in persons over 40 years of age:

The 20 per cent of the population 40 years of age and over who have a chronic disease account for

72.3 per cent of the disabled sick days in the population of this age

72.0 per cent of the bed sick days in the population of this age

83.3 per cent of the hospital (including institutional) sick days in the population of this age.

C. Hospital facilities of Baltimore

General hospitals

In 1940, there were 5,371 beds in general hospitals having AMA approval.

73.4 per cent of these were utilized by residents of Baltimore City.

For Baltimore residents there were 4.6 beds per 1,000 population.

Ratio for white population 3.9, for Negroes 5.4.

90 hospital admissions per 1,000 population per year.

935,317 hospital sick days (Baltimore residents) or 1.088 hospital sick days per person per year.

Bed distribution

Approximate racial and sex distribution of hospital beds, 1945.

	(73 per cent utilized by residents of Baltimore)		
	White	Colored	Total
Male or female	1,200	104	1,304
Adult male	1,070	412	1,482
Adult female	1,538	495	2,033
Children	380	144	524
	4,188	1,155	5,343
Estimated beds for Baltimore residents	2,939	976	3,925
Per cent available for Baltimore residents	70.2	84.5	73.4

Of the beds utilized by Baltimore residents, 24.9 per cent of hospital beds are available for colored; 19.4 per cent of population colored. Approximately 24 per cent of deaths in hospital, colored.

9.8 per cent of hospital beds allocated to children;
13.3 per cent of population under 10 years of age,
21.2 per cent under 15 years of age.

Type of accommodation: 1945

Rooms with	Number of beds	Per cent
1 bed	1,153	21.6
2 beds	714	13.4
3 or 4 beds	464	8.7
5, 6, or 7 beds	108	2.0
8 or more beds	1,241	23.2
Cubicles		
Completely divided	98	1.8
Partially divided	1,565	29.3
	5,343	100.0

Special hospitals

	Beds	Average census	Number of admissions	Per cent Baltimore residents
Communicable diseases				
Sydenham Hospital	110	54	1,211	86.0
Eye, ear, nose, and throat				
Baltimore E.E.N.T.	60	40	2,823	85.3
Presbyterian E.E.N.T.	40	8	1,805	79.5
Orthopedic				
Children's Hospital School	130	98	346	34.2
Kernan Hospital	130	75	195	39.6
Tuberculosis				
Baltimore City Hospitals	280	263	371	100.0
State sanatoria	1,071	1,013	1,299	51.4
Private sanatoria	216	242	263	66.1
Convalescent				
Happy Hills Convalescent Home	80	71	308	84.6
Mental and nervous				
State	6,702	6,308	1,618	54.6
Private	979	942	656	n.a.

D. Outpatient service

Location:

All but one located south of North Avenue.

Geographical distribution of patients:

Patients live principally in immediate neighborhood.

The Johns Hopkins Hospital Dispensaries draw most heavily from immediate neighborhood, with considerable numbers from entire eastern section of city, very little from western section of city.

University Hospital Dispensaries draw largely from immediate neighborhood, with appreciable numbers from other section of west Baltimore, especially heavy Negro population north of central business district.

Volume of service

	Number of visits	Visits per 1,000 population
1930	510,263	633
1940	621,109	722

Trend:

No clearly defined trends. Number of visits fluctuate widely for individual dispensaries. No standardization of service.

Hospital superintendents usually apologetic of dispensary service and are anxious to improve service.

E. Baltimore City Health Department

General and specific functions summarized for committee meeting of November 20, 1945.

Provides many preventive, health maintenance, diagnostic and therapeutic services, including the maintenance of a communicable disease hospital with an extern service for cases not hospitalized; cooperates with physicians and hospitals in the integration of these services with other medical care services of the community; carries out investigations of epidemiological, laboratory, and statistical nature as to the occurrence and distribution of infectious, occupational, and other diseases, causes of death, health hazards and of means of control or reduction; conducts for the public, in cooperation with the medical profession, health information service for the dissemination of accurate knowledge on the prevention and control of disease and other health hazards.

Services to population largely decentralized, through health districts, neighborhood health centers, schools, and clinics, generalized public health nursing service. Planning and direction of services under full-time medical and other professional personnel, clinical work of clinics is conducted largely by part-time contract physicians.

F. Physicians of Baltimore City

Trend:

Physicians limiting practice to specialty have increased rapidly in 20 years: 1921—197; 1931—365; 1940—514.

Ratio to population: 1921—1:3778; 1931—1:2223; 1940—1:1661.

Other active physicians (general practitioners and physicians with partial specialization and excluding physicians less than 3 years out of medical school): 1921—997; 1931—921; 1940—926.

Ratio to population: 1921—1:747; 1931—1:881; 1940—1:909.

Geographic distribution:

Specialists—definite concentrations especially in Medical Arts, St. Paul and Calvert Streets, and Hopkins Areas.

General practitioners—Widely distributed.

Physicians in active practice: 1940

Specialists	514 or 35.7 per cent
Nonspecialist	926 or 64.3 per cent

Hospital affiliation—general practitioner (based on sample of 515 nonspecialists)

Hospital and physician state physician has	
Hospital appointment	56.1 per cent
No hospital appointment	21.2 per cent
Hospital and physician's statements do not agree	
Hospital only indicates appointment,	12.4 per cent
Physician only indicates appointment,	10.3 per cent

Services of physicians: 1942

	Services per person			
	Total	In office	In hospital	At home
All physicians	6.17	4.19	0.65	1.33
White male physicians				
General practice	3.38	2.33	0.17	0.88
Limited to specialty	2.27	1.50	0.43	0.34
Negro male physicians	0.40	0.28	0.03	0.09
All female physicians	0.12	0.08	0.03	0.01

Percentage distribution of patient load

	Office	Hospital	Home
White male physicians			
General practice	68.9	5.0	26.1
Limited to specialty			
Internal medicine	64.5	13.1	22.4
Surgery	67.3	22.7	10.0
Obstetrics and gynecology	65.9	25.9	8.2
Pediatrics	44.0	12.9	43.1
Ophthalmology and Otorhinolaryngology	82.0	15.5	2.4
Neurology and psychiatry	64.5	22.6	13.9
Negro male physicians	69.8	6.3	23.9
All female physicians	63.2	23.4	9.4

Medical attendant of births		Medical attendant at death	
Born in hospital	85.7 per cent	Died in hospital	49.6 per cent
Born at home		Died at home	
Attendant with		Specialist	6.5 per cent
Hospital appointment	10.2 per cent	General practitioner with	
No hospital appointment	4.1 per cent	Hospital appointment	31.3 per cent
		No hospital appointment	12.6 per cent

General practitioner with no hospital affiliation most active in attending colored patients and white persons living in census tracts with a median rental of $20–24 per month.

General practitioners with hospital affiliation utilize laboratory facilities of city health department more extensively and withdraw more biologicals for preventive and therapeutic purposes than those with no hospital affiliation.

Evaluation of a Health Education Program

ANDIE L. KNUTSON, Ph.D., F.A.P.H.A., and BENJAMIN SHIMBERG, Ph.D.

By-products immediately useful in altering the design of a going program may accrue to long-range measurements of achievement.

The term "evaluation" has been used to cover a variety of activities. A sharper definition of the concept seems desirable. As a point of departure for this discussion we have chosen a generally accepted definition of evaluation. We mean by evaluation the process of determining the worth or value of something relative to a given purpose or objective. In this paper we shall attempt to differentiate between two types of evaluation which are now used in assessing program progress and achievement.

Each of us is constantly making evaluations in our daily lives, judging the worth of ideas against the background of our knowledge and experiences, weighing the pros and cons in argument, and selecting from among alternative courses of action. Both in our personal as well as in our professional roles, we frequently make decisions on the basis of armchair judgment without adequate consideration of facts that may be available or from information that could be secured.

In program activities, the quality of the decisions we make determines in large measure the effectiveness of our efforts. Sound decisions are possible only if based on the best information available. We have discussed elsewhere the importance of adequate exploration and fact-finding as a basis for making sound decisions about program goals and methods.[1-3] The more we know about a situation, the better we understand the problem; the more insight we have into the reasoning and behavior of the people concerned—their past experiences, their present attitudes, and their ways of life—the more likely we are to make good initial decisions about the program and its operation. The worth of our decisions will depend in part on whether we have asked ourselves the right questions and recognized the significance of the relevant variables. This means differentiating fact from opinion, reliable data from guesswork, and assumptions and hypotheses from knowledge and principles that have been firmly established. In this sense, program evaluation is a continuous process beginning even before program plans are formulated. The soundness of each program decision will depend in large measure on our ability to assemble and to evaluate properly various kinds of information that can be utilized in decision making.

The primary purpose of evaluation is to provide valid estimates of effectiveness in achieving specific objectives. We would recognize also a second purpose—to provide guidance in carrying out program activities. To achieve both purposes, two types of evaluation are

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needed: the measurement of program achievement and program progress.

A logical division of any program objective into specific goals and subgoals identifies intermediate steps which need to be taken in order to achieve the ultimate objective. For example, if the over-all objective of the program is to control tuberculosis in the community, the intermediate goals may be to find active cases of tuberculosis, to get such cases under treatment, etc. To extend this analysis a step further, subgoals may include reaching agreement on the philosophy or broad approaches to be followed and achieving understanding and agreement on cooperative relationships.

In assessing program achievement, concrete and valid evidence must be obtained on the degree to which the program has attained its stated objective. Obviously, such evaluation can be carried out only after the program has been in operation long enough to permit measurement of final achievement. The plans for such evaluation, however, must be set up while the program itself is in the planning stage. This is necessary to assure that the measures of program achievement relate to real objectives and to objectives agreed upon at the beginning rather than to post hoc objectives. The participation of those responsible for evaluation in program planning will help to assure that these objectives are defined in a manner precise enough to permit measurement and that the criteria decided upon are valid and acceptable to all concerned. Sound evaluation studies of program achievement are essential if we are ever to know whether or not we are attaining the goal for which we strive. The public, too, has a right to know whether our efforts and money are well spent.

Concrete and valid evidence of the achievement of specific health goals is frequently most difficult to obtain. Many of our objectives are broad and difficult to measure. Often our programs are planned to produce long-range effects so that observable results are not to be expected until the program has been in operation for several years. Frequently, there are a multiplicity of factors beyond our control which may influence the outcome of the health program so that it is next to impossible to establish the success of a given program independently of other programs. Recognition of these difficulties in evaluating program achievement does not deprecate its importance. With careful planning, more precise definition of goals, and more rigid specification of the criteria of program success, we can go considerably beyond where we now are in evaluating the achievement of health education—providing, of course, we obtain adequate base lines and have the patience to wait until the program has been in operation for a reasonable period of time.

The evaluation of program progress is directed toward providing guidance for program activity. This type of evaluation has several advantages over evaluation of program achievement: it can be done in smaller units—instead of evaluating an entire program, it is concerned with some smaller segment of the program. It requires less of an investment in time or personnel at any given moment. It yields usable results at a time that they are needed and it helps to increase the likelihood that the program will be effective.

Such evaluation calls for gathering objective data to guide decision making in each phase of program development and operation. The purpose of gathering data is to help us check on the soundness of decisions made, or actions taken, and to provide a sound basis for future decisions and actions. For example, we may seek to communicate some message to a person. If we ask him to tell us in his own words, or to demonstrate for us what we have

tried to explain, we may discover we have not communicated successfully. Discussion with him may identify difficulties and possible solutions which could then be tested in action. Within the field of communication, evaluation of this type is often called pretesting. It may include the checking of the readability of written material by some of the standard formulas; it may involve interviews with a sample of the intended audience to determine their understanding and comprehension of a message; it may take the form of observation or tests to ascertain whether people can carry out the procedures suggested.

When the pretest reveals weaknesses in methods or materials it is often possible to ascertain from the respondents the sources of difficulty and ways of overcoming these difficulties. Such fact-finding and exploration in the course of pretesting methods or materials already prepared often makes it possible to obtain new information or insights which may contribute to future planning. The pretest therefore serves an important exploratory role in the planning of future program steps while checking steps already taken.

Anyone who has ventured to try out preliminary materials on a target audience can relate countless anecdotes about the things he found out from talking to people. Quite often it comes as a rude awakening to discover that words do not always convey the meaning intended—that pictures and symbols lend themselves to unexpected interpretations. At times we may fail to communicate with even the better educated members of the audience. Some of us who were pretesting a booklet about sanitation were surprised to discover that each of seven professional workers in a local health department interpreted a pictorial map differently—and that not one of them interpreted it the way its creater had intended it to be understood.

Examples could be multiplied many times over, for new illustrations are born each time a program or program materials are subjected to this form of evaluation. Step-by-step or day-to-day check-ups help insure that each new phase of the program will accomplish its intended purpose and that each phase is built on the positive achievement of the preceding phases. It helps to avoid some of the distress and disappointment which we experience when we discover, too late, that an essential ingredient of our program has failed to produce the expected results and that, consequently, subsequent steps were of no avail.

We have dwelt at some length in the discussion of the purposes of evaluating health education and in distinguishing between the evaluation of program progress and program achievement because some clarification along these lines will be helpful in the present discussion. Both types of evaluation are currently being applied in health education and are contributing to program improvement. More and better applications of both are needed. It would be folly to imply, however, that the distinction between evaluation of progress and evaluation of achievement is as clear in practice as it may seem on paper. Although either kind of evaluation can be applied independently of the other, both types may be applied concurrently, even within the same study. Whenever a program is being assessed efforts may be made to identify ways of improvement at the same time as measures of achievement are made.

Such a situation occurred when the National American Red Cross asked the assistance of the Educational Testing Service in evaluating the effectiveness of television as a medium for teaching home nursing. The primary purpose of this evaluation was to provide data necessary for deciding whether or not to use television for this purpose. It was recognized, however, that in the process of collecting the necessary data

for evaluation, it would also be possible to obtain information useful in strengthening the course of instruction itself and to identify special problems that should be considered in giving such instruction by television. Thus, while the primary purpose of evaluation was measuring program achievement, an opportunity was also provided to collect other information useful for planning future courses in home nursing.

Other studies on the use of television for instructional purposes had indicated that this medium is effective in transmitting certain types of information, but evidence was lacking on these questions: Would adults, viewing a television course on home nursing voluntarily, acquire adequate knowledge and understanding of the facts and principles taught in the course? Could television also teach them such skills as those involved in home nursing?

The Red Cross had arranged through the University of Houston School of Nursing to try out its home nursing course on television over Station KUHT, the educational television station operated by the University of Houston. They hoped to find out from this experiment how television teaching by itself and television teaching, plus some supervised practice, compared with the conventional classroom method.

Three comparison groups were used in the study. One group of about 200 students received all of its instruction through television. Another group of similar size was taught through television and, in addition, spent about one hour a week in organized practice sessions. The third group, in Oklahoma City, took the standard home nursing course without the use of television. These women met twice a week for a two-hour class period and were taught the same material as the television groups. The television programs were telecast from 8:30 to 9:00 on Tuesday and Thursday evenings. There were 13 such programs. The practice sessions were held on Wednesday in neighborhood practice centers—which had been set up in schools, churches, etc. Only those who viewed eight or more, programs were included in the study sample.

In order to measure knowledge and understanding of the facts and principles taught in the course, a multiple-choice written test was developed on the basis of the program objectives set forth by the Red Cross. Standardized performance tests were developed to measure the students' abilities to carry out certain of the procedures taught in the course. These included such tasks as thermometer reading, thermometer cleansing, filling a hot water bag, moving a patient, and disposing of contaminated waste. Students took the tests before receiving instruction and again after completing the course. The method of analysis of covariance was used to adjust for the relatively small differences in performance and vocabulary existing between the three groups prior to instruction.

It may be of interest that the evaluation was done almost entirely by volunteers recruited in the community. In Houston the director of testing and counseling at the University of Houston and eight graduate students administered the written tests and supervised the 20 Red Cross volunteers who had been trained to give the individual performance tests. In Oklahoma City five graduate students from the University of Oklahoma at Norman and some 60 Red Cross volunteers cooperated to test nearly 300 women in two days.

The measurement of program achievement revealed little difference among the three groups and provided indications of the over-all effect of the present home nursing course. For example, the analysis of results on the written test revealed that all three groups learned about the same amount, regardless of the method of instruction. On the per-

formance test, the classroom group did a little better than either of the television groups. The difference was reliable statistically, but too small to be considered of great practical significance. There was no difference on the over-all performance test score between those who had received instruction by television only and those who had, in addition, participated in practice sessions.

The group trained by television only seems to have gained more than the classroom group in proportion to the amount of time spent receiving instruction. The average television student spent between five and six hours in front of the TV set, while the average classroom student spent 11 or 12 hours in class. These findings suggest that in situations comparable to those found in Houston television can be used to teach home nursing and results may be expected to compare favorably with the results of conventional methods of instruction. Thus, the evaluation of achievement showed that the teaching of home nursing by television under these conditions was in general as effective as teaching in the classroom.[4]

Additional data useful in planning program improvement were obtained from an analysis of the test results and through the use of a questionnaire completed by the student. An analysis of written and performance tests taken at the beginning of the course gave some indications of the level of knowledge and skill existant before the instruction began. The post-test helped to identify areas in which little or no improvement was made. Specific analysis of such results in relation to course content helped to identify sources of difficulty. For example, it was found that even after they had completed the course, between 40 and 50 per cent of the women could not read a clinical thermometer accurately within the limit of error allowed —which was two-tenths of a degree. This was true of the classroom group, as well as the television group which had received practice. The TV-only group showed no improvement at all on this item; in fact, there was a slight drop.

We are not sure why over 40 per cent of the students were unable to read the thermometer correctly. Further study is clearly needed on this point. We might ask: Do women miss this item because of poor eyesight? Are they unable to cope with decimals? Are they careless? Does the instruction confuse some people? Do they lose confidence? Do they consider this skill unimportant and unnecessary to them? Or are there other factors at work of which we are not even aware? We also might ask: What are the implications for medicine and public health in the fact that about half the women in a group such as this are reading and recording temperatures incorrectly? Even after completing a course which emphasizes the importance of correctly reading and recording temperatures in home care of the sick, four out of 10 women had still failed to master this skill.

It might be added, parenthetically, that this finding underscores the importance of using actual performance measures rather than relying on verbal responses only. A few years ago, the U. S. Department of Agriculture made a rather comprehensive study of the effectiveness of television in teaching improved sewing practices to housewives in Washington, D. C.[5] However, instead of a performance measure, the criterion was the student's own estimate of what she had learned. If we had asked the women in the Red Cross study whether they could read a thermometer correctly, many if not most of those who failed this item on a performance test probably would have answered affirmatively. Some of them would have answered this way to save face, knowing that they had been taught how to read the thermometer and that they would

be confessing ignorance if they admitted not having learned. On the other hand, others might have answered affirmatively, honestly believing that they could read the thermometer correctly, not realizing, perhaps, that they had not adequately mastered this skill.

In addition to helping locate problems related to course content, the test results also helped to identify problems relating to method. It will be recalled, for example, that there was no difference in the total score on the performance test between those who had attended practice sessions and those who had not done so. This result suggested that practice sessions, as they had been set up in Houston, contributed little if anything to the students' abilities to perform the procedures that were sampled in the performance test. Responses to the questionnaire, however, showed that most students considered them helpful adjuncts to the course and suggested specific ways of improving these sessions. Although students who had attended four or more practice sessions were unanimous in recommending that their friends take the course by television plus practice, we must conclude that if the primary aim of the practice sessions was to increase proficiency, they did not adequately fulfill their function. This calls attention to the need for further experimentation to find ways of making these sessions more effective, if they are to be retained as part of the program.

Since relatively little is known about problems involved in teaching adults by television, part of the questionnaire was focused in this direction. It was found, for example, that the time 8:30 to 9:00 P.M., which is considered by television people to be highly desirable time, was unsatisfactory for many in the group toward which the program was directed since the program conflicted with popular entertainment programs of interest to others in the family. Many women suggested that a morning or early afternoon time would have been preferable.

Many students thought that the course ran for too long a period of time and recommended that programs be presented more frequently so that the essential material might be covered in a month instead of in seven weeks. They suggested that a course outline or study guide be made available so that they could keep up with the group if they missed a program. They also pointed out that a guide would serve as a useful source for reference and review.

Some useful insights about the focus and content of the course were also derived from free responses on the questionnaire. When students were invited to suggest topics they thought should have been covered many of the responses indicated that some women had failed to see the implications of the training for themselves or in relation to problems they were facing with their own families. For example, some women suggested that more time be spent on symptoms of illness and care of the sick child. While it is true that the principles and practices covered in the course apply to the sick child as well as to the sick adult, this was apparently not perceived by some viewers. As these suggestions and observations coming from the respondents are applied in planning programs in the future, these programs will tie in more closely with the patterns of reasoning and behavior of the audience. Then observers will more readily be able to identify the information and principles presented as applying to their individual situations.

Summary

We have defined evaluation as "the process of determining the worth or value of something relative to a given purpose." In this sense, program evaluation is a continuous process beginning even before program plans are formu-

lated. Its purposes are to provide valid estimates of effectiveness in achieving specific objectives and to provide guidance in carrying out program activities. To achieve both purposes, two types of evaluation are needed: measurement of program achievement and program progress. Although either kind of evaluation can be applied independently of the other, both may be applied concurrently, even within the same study.

We have attempted to illustrate this in discussing a study of the effectiveness of television as used by the National American Red Cross in teaching home nursing. The findings of this study suggest that the teaching of home nursing by television under the conditions described was in general as effective as classroom teaching. By including in the study of program achievement some approaches to yield information on program progress many useful suggestions for program improvements were obtained.

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It was inevitable that an attempt would be made to apply the methods of the natural sciences to human affairs. Chemical and physical approaches to the subtle problems of living matter—once considered dominated by mysterious "vital forces"—had striking and promising successes. It was wholly natural to attempt to apply similar analytical and quantitative techniques to social problems. It should not be surprising that this attempt would encounter major obstacles—as did the efforts of those who first tried to apply Newton's physics and Lavoisier's chemistry to biology and medicine. The techniques appropriate to the laboratory were insufficient for the study of man in his social environment; the circumstances of study were different in fundamental respects; conditions could not be readily controlled so as to study one factor at a time, as the physical scientist often does. The basic equipment of the scientist was nevertheless required: careful examination of the evidence, an objective approach to data, and a lively and fertile imagination in the construction of hypotheses to be tested, and, throughout, a clear recognition that there must be a joint emphasis on speculation and experience. Beyond that, techniques had to be revised and improved; the danger of seeing too much had to be avoided; and the disconcerting influences of undetected factors had to be faced. Although his problems of procedure were difficult enough, the social scientist also faced the resistance and even hostility of man himself, with his personal or group interests affected and his emotions and traditional patterns upset by new knowledge.

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Field Training for Public Health Dentists

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Outlined by the chairman are the challenging recommendations of a conference jointly sponsored by two committees of the American Public Health Association.

Field training in public health may be defined as a planned and supervised program of practical experience designed to supplement formal academic instruction and to enable the trainee to apply, in typical work situations, the principles and technics learned in the classroom. It is generally agreed by educators and practitioners alike that a well organized program of field training is highly desirable, in fact, essential for the adequate educational preparation of public health workers, including dentists.

In defining the educational qualifications of public health dentists, the APHA Committee on Professional Education in 1952 recommended "Satisfactory completion of one academic year of study . . . and sufficient practical field experience in a public health department to satisfy the administrative officer or committee of the school of public health. . . . More extensive field experience or residency training under supervision of a recognized public health agency is advisable for the public health dentist who is to assume important administrative responsibilities." [1]

The American Board of Dental Public Health, organized in 1950, has included in its requirements for the examination and certification of "specialists" in dental public health administration "accredited field training of at least one year in public health practice under competent direction which included planned instruction, observation and participation in a comprehensive, organized public health program, placing emphasis on dental health, or equivalent training and experience." [2] The board is actively interested in developing suitable field training programs for public health dentists but must waive this specific requirement until such opportunities can be made available. Both the board and the APHA Dental Health Section have created committees on field training to help meet this need, and they are working closely with each other and with other public health groups in their studies of this problem.

An illustration of this cooperative effort was the first Conference on Field Training for Public Health Dentists, held in New York City, June 28–29, 1954, under the joint sponsorship of the APHA Committee on Professional Education and the Dental Health Section Committee on Field Training. This conference represented the first organized attempt, on a national basis, to make a systematic study of the problems of field training for public health dentists and to formulate plans for the solution of these problems. The 17 invited participants included five public health dentists, two dental educators, and representatives of general public health administration, nursing, sanitary engineering, and health education. Some of the general observations and conclusions of this conference are incorporated in this paper.

Field training in public health may

be divided into three general categories: (1) orientation, (2) intra-academic field experience, and (3) postacademic field training or residency. In each case, the fundamental objectives are the same: To provide the student with a working knowledge and practical experience in general and dental public health administration. An essential of all field training is that it should be a planned and supervised educational experience adapted so far as may be possible to the trainee's individual background and needs. It follows, therefore, that the primary responsibility for the planning and general supervision of a field training program should be in the hands of an educational agency, working in close cooperation with the service agency which functions as the training center. Too often in the past, however, the service agency has been assigned full responsibility for field training without having qualified educational personnel and without access to the educational and consultative services of a school of public health. This has frequently resulted in a field training program that provided a stereotyped work situation for the trainee, rather than a planned and effective educational experience directly related to his academic program. It is of fundamental importance, therefore, that there be close liaison between the educational institution and the service agency involved in field training, and that there be clear definition and delineation of the responsibilities which each is to assume.

In establishing the specific purposes of field training, it is necessary to consider the particular competences and skills needed by the public health dentist to function effectively as a member of the public health team and to identify those which require field training in addition to academic study for their full development in the trainee. These competences, classified according to the general allocation of educational responsibility between the academic institution and the service agency, include:

1. School of Public Health:

(a) Learning to utilize information from the basic disciplines of public health that are essential for the team approach to the solution of problems affecting the public health;

(b) Utilizing effective methods of communication;

(c) Keeping informed regarding current findings of dental research;

(d) Maintaining competency to direct any program that provides dental services;

(e) Serving as a consultant in oral diagnosis;

(f) Developing laboratory facilities for improving the oral diagnoses made by practicing dentists (pathologic studies of oral biopsies, providing lactobacillus counts or Snyder tests, determination of F in drinking waters, bacteriologic studies of smears and cultured root canals);

(g) Providing professional advice in developing and supplying authentic and effective educational media for the promotion of dental health;

(h) Instructing health and teaching personnel in those scientific practices of dental health that are pertinent for public health personnel and school teachers to know;

(i) Instituting projects of dental research for the improvement of the public's health.

2. School of Public Health and Field Training Center Jointly:

(a) Coordinating the efforts of a variety of agencies, official and nonofficial, concerned with dental health;

(b) Developing and using specialized indexes and records designed to improve epidemiologic surveys and to provide base lines for the appraisal of the efficacy of dental programs;

(c) Collecting sufficient detailed data to expose the extent of the state's problem in

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attaining oral health: (1) population facts; (2) economic conditions; (3) resources in dental personnel; (4) technical auxiliary assistance; (5) equipment and clinical facilities; (6) productivity of personnel; (7) census of specialists available for such services as habilitation of persons handicapped by oral clefts, by cerebral palsy, by hereditary and congenital anomalies, by rheumatic hearts, by deficient mentalities, by severe malocclusions, by chronic diseases, or by old age; (8) definition of standards of care; (9) determination of prevalence of oral health needs in neglected mouths as well as incidence of oral health needs in persons experiencing regular, periodic oral health maintenance; and (10) quantitative measurement of blocks to oral health;

(d) Analyzing these data and developing plans for practical programs;

(e) Instituting programs of control or prevention as technics for doing so become available and are confirmed thoroughly by research;

(f) Interpreting the dental health programs, as they are developed, to the state's dentists and making clear the social implications of such programs;

(g) Appraising periodically the achievement of the various facets of the programs organized for improving the public's health.

3. Field Training Center:

(a) Assisting in the preparation and initiation of plans for the dental phases of local health programs;

(b) Laboring to improve, as a constant activity, the scientific caliber of the state's dental profession, since this professional group must supply the bulk of the oral services which are essential for an improved state-wide status of oral health;

(c) Administering adequately the office tasks of the staff of the unit of public health dentistry (personnel management, staff meetings, handling correspondence, budgeting, anticipating needs, determining short-range and long-range objectives);

(d) Performing as a member of a team of specialists;

(e) Comprehending the scope, functions, and administrative procedures of a state and local program of public health and the niche of public health dentistry in them;

(f) Establishing rapport and working effectively with a variety of state and local groups and officials;

(g) Interpreting dental health needs to the public.

To provide field training opportunities for public health dentists that will meet the educational needs outlined previously suitable programs and training centers are required. As was pointed out before, such facilities are not now available. Much progress has been made, however, in the development of field training programs for other types of public health personnel, especially for health officers. For the latter, opportunities for accredited field training now exist in a majority of the states and it appears logical that these facilities should serve as a basis for the development of similar training facilities for public health dentists. Certain criteria must be observed, however, in the selection of centers which can be considered qualified to meet the particular educational needs of the dentist. These include:

Desirable Geographic Location—Because of the limited number of administrative dental personnel, it is necessary that at the outset the state should be the unit-area of training. Every effort should be made to utilize community and other programs in the state that afford special training potential for trainees. The location of a school of public health in or near the area will afford additional resources for training. The area should afford reasonably adequate financial and personnel resources for dental program operation. Accreditation of the area should be a long-range goal.

Personnel of the Training Area—The area should have a supervising preceptor for the trainee who has the experience, interest, and capacity for training. These qualities should be measured by evidence of previous success with inservice staff training, with effective use of staff meetings, and like training devices. The preceptor should possess the ability to specify the experiences to be gained by the trainee and to define the responsibilities of the several persons and seg-

ments of the sponsoring agency. Ideally, he should be affiliated with the school of public health.

The area should have a dental staff adequate to conduct the program, to supervise the training, to develop improved training procedures, and a staff director with full authority to carry out these functions. The staff should possess competence in the use of sound teaching methods through adjustment of the program to meet the needs of the trainee within community resources; in properly timing the experiences of the trainee with respect to his potential for assuming increased responsibility; and in adjustment and integration of the teaching of the trainee with other programs of the training area.

Program of the Area—The area should maintain a comprehensive dental activity to meet the needs of the state or community. For example, the dental program should contain the following elements: (1) identification of the problem; (2) evaluation of resources to meet the problem; (3) a determination of priority for program activities; (4) planning and initiation of a program to meet the needs within the resources; and (5) periodic evaluation of the resources and progress of the program.

The operating program should permit scheduling of the trainee so that his experiences are broadly representative of the activities of the department, for example, home visits with public health nurses, sanitary inspectors, etc. The preceptor (dental director) should have the responsibility and authority to work with resource people to spell out these specific extra-dental program activities.

The program should permit the trainee adequate opportunities in dental program planning with respect to budgetary problems, preparation of annual or biennial plans, and the effective utilization of personnel. The trainee should be permitted, and perhaps required, to submit operating reports on his assigned responsibilities. A highly desirable qualification of the training area would be its use in the training of personnel in other public health disciplines.

Progress of the Trainee—The dental staff of the training area should have exhibited a willingness to effect procedures for evaluating the program with respect to the progress of the trainee. For example, (1) quarterly reports from the trainee spelling out strengths and weaknesses of his experiences; (2) supervisor's self-analyses of evaluation of the program designed for the trainee; and (3) periodic assessment of the progress of the trainee by his supervisor or preceptor.

The actual development of appropriate field training programs for public health dentists will present many difficulties, not the least of which are the problems of financing the training centers and subsidizing, at least in part, the costs to the trainees. The recent conference included in its recommendations that the American Public Health Association be urged to explore methods of financing graduate education in public health, including field training. It was also agreed that state health departments should be encouraged to give consideration to the development of field training centers for dental personnel and to give greater attention to dental public health in the field training experiences being offered for other types of public health personnel. The conference discussion pointed to the need for schools of public health to take a more active and direct interest in the organization and conduct of field training programs, both intra-academic and postacademic, for dental and for other categories of public health personnel as well. The establishment of one or more pilot programs in selected states was suggested as a sound approach to the long-range development of sound and adequate field training facilities for dentists.

It is evident that vigorous leadership, initiative, and imagination will be needed if suitable opportunities are eventually to be provided for field training, as an integral part of the graduate education of the public health dentist. This leadership must come from dentistry through organizations, such as the Dental Health Section of the American Public Health Association, the American Association of Public Health Dentists, the Association of State and Territorial Dental Directors, and the Section on Public Health Dentistry of the American Dental Association.

Shall we accept the challenge?

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. . . The history of the intellectual processes by which man has accumulated knowledge shows that observation, experimentation, induction, deduction and verification have each had an important role to play and that it is by their skillful and imaginative combined use that we have been able to push back the frontiers of knowledge. Without empirical examination, general propositions fail to establish and maintain contact with reality; without general concepts, factfinding becomes aimless wandering and produces helter-skelter collections of unrelated bits and pieces. By observation and experimentation man refines his ideas about the world in which he lives; by other rational processes he reduces his masses of fact and impression to a degree of order and gives them meaning. After enough regularity has been exposed to justify the construction of a general theory, then and only then can occur the crucial test of verification. Throughout this process the questions "What is it?" and "How does it happen?" are among the tools man uses while seeking an answer to the underlying question, "What does it mean?"

(From: Statement of the Rockefeller Foundation and the General Education Board before the Special Committee to Investigate Tax Exempt Foundations, House of Representatives—83rd Congress.)

Sanitation Aspects of "Take-Out" Type Foods

CHARLES L. SENN, F.A.P.H.A., and COLONEL PAUL P. LOGAN

Briefly stated are a number of recommendations for safeguarding a relatively new group of prepared foods that are quite vulnerable to chance contamination.

Serve-yourself freezers in modern supermarkets are filled with a wide variety of frozen, precooked foods. They include meat, poultry and vegetable pies, fried fish and poultry, and complete dinners. An idea of the rapid growth of this frozen take-out food business is given by figures from the Institute of American Poultry Industries showing the annual production of frozen poultry pies rose from 25 million units in 1952 to 250 million in 1954. In some form, carry-out sales departments are in operation in hundreds of restaurants throughout the country. In several cases these take-out products of "name restaurants" have become so popular that supermarkets and grocery stores in the vicinity purchase them on a wholesale basis for their own retail sales. Volume sales through grocery outlets have caused Smith's of Toledo, Stoffer's of Cleveland, Schrafft's of New York, among others, to establish factories for the increased production.

Take-out foods are becoming more popular with workers who are no longer content to lunch on cold sandwiches. Panel trucks with stainless steel food display, storage and serving equipment, operated by "industrial caterers," serve plants too small to maintain their own cafeterias. They also serve workers at construction projects and various places of employment. One Southern California firm that supplies them with foods, including coffee, estimates its 150 independent caterers serve 50,000 persons a day. There are a total of 1,500 industrial caterers in Southern California, so the catering vehicles may serve as many as 500,000 persons a day in this single area. Industrial caterers now serve complete hot meals, hot sandwiches, meat and poultry pies, beef stew, spaghetti and meat balls, baked beans, soups, salads, dairy products, and hot and cold drinks. The foods are individually packaged at a central headquarters so no bulk food is served except coffee. Barbecued poultry and spare ribs are now being prepared in rotisseries on the counters of numerous meat markets and supermarkets, providing extra convenience for the housewife but adding another set of problems.

An appreciable amount of the time of the local health department sanitarians is being devoted to restaurant sanitation. Cooperative work between the restaurant industry and health officials is resulting in generally higher

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sanitation standards. Food poisoning and infection from commercial restaurants is becoming increasingly rare.

The canning industry has done a notable job in order to insure that commercially processed canned foods are completely safe. Federal and state meat inspectors are doing a good job to see that meat and meat products are wholesome and processed under sanitary conditions. The poultry industry is working with health officials to develop standards for the processing, handling, and distribution of poultry. Milk sanitation has pretty well resulted in a safe and wholesome supply. There is need for a similar amount of time and effort to be devoted to the sanitary supervision of "take-out" foods operations.

Some of the public health aspects of plants for processing take-out, ready-to-eat poultry are outlined in a statement summarizing research performed by members of the staff of a medical college in cooperation with the Committee on Food Research of the Quartermaster Food and Container Institute of the Armed Forces.[1] "To prevent the occurrence of enteric disease epidemics traceable to fresh-frozen and precooked frozen foods (with rigid government control as a probable consequence), the frozen food industry must recognize certain dangers. In the boned-chicken foods, for example, industry should recognize that:

1. Various paratyphoid organisms, capable of producing intestinal and other complicating infections in man, have been isolated from eviscerated poultry.
2. Paratyphoid and typhoid bacilli survive for long periods of time in frozen foods.
3. The botulism organism and its toxin survive indefinitely in frozen foods and remain potent after prolonged freezing.

Failure to recognize these signs of danger and to assure rigid bacteriological control will ultimately lead to difficulty.

Written descriptions in the literature and field inspections produce a picture of conditions which should be improved at some of the processing plants. Chickens for pies or à-la-king are thoroughly cooked in pressure cookers or open vats so the meat can easily be pulled from the bones. After cooling for a short period, the skin is peeled and the meat is picked from the bones by hand. In some plants as many as 25 or more pairs of hands work over the chicken as it moves along the line. The meat is then diced in a special machine. Some dicers were built without enough thought to sanitation. Parts which come in contact with the poultry meat cannot be adequately cleaned. In some plants the product is conveyed in contact with belts which are not readily cleanable.

The much-handled, diced chicken is mixed with a rather thick, gravy-like filler material, either before or after it is placed in the unbaked pie crust. Observations of household practices in heating and baking the crust reveal that the ingredients may not be rewarmed to pasteurization temperatures before they are consumed. One user of the pies advocated testing the home-heated pie with a fork, before serving, to be sure the center of the mass was not still frozen.

No bacteriologic studies are required to indicate the desirability of developing improved procedures. However, studies at one boning plant indicated up to 100,000 coliform and 9,000,000 total count per gm. of poultry.[1] While the field inspections made in preparation of this paper revealed that the poultry and other raw ingredients were of reasonably good grade, there was no official routine inspection at some plants, so consideration should be given to the temptation of a few unscrupulous processors to possibly utilize inferior raw products which cannot be detected by examination of the finished product.

An indication of what can be accomplished by high sanitation standards is given by the findings of studies in which one of the authors participated [2] on the

keeping quality of chicken-à-la-king, including bacteriologic evaluations of processing procedures.

"The manufacturing conditions with respect to raw materials and ingredients, equipment, and working area were examined bacteriologically, and routine precautionary measures were established.

"The raw ingredients used were of top quality. Routine sanitary precautions were observed in the care of kitchen equipment. All stainless steel table tops used in boning and packaging were thoroughly washed with soap and hot water and were then sponged with a disinfecting solution. The ladles, knives, pans, trays, and other utensils used in the preparation of the finished product were steam sterilized. Large vessels, such as the jacketed kettles and the refrigerating sauce vat were pretreated with boiling water for 15 minutes. Swab samples of the cleansed surfaces of food equipment were cultured for aerobic organisms and coliform bacteria. These tests showed no coliform organisms and very low counts for aerobic bacteria."

In that study, one-half of the samples were packed cold and one-half hot (189° F.–212° F.). Standard plate counts of the products that were packed cold averaged 4,000 to 6,000 per gm., while the product packed hot was practically sterile. The report of the study continued:

"Bacteriological study of precooked frozen chicken-à-la-king demonstrated that a final product of high acceptability and very low bacterial count can be manufactured when good sanitary practices are observed. Comparison of two methods of packaging showed that a substantially sterile product resulted from 'hot filling' at 189° F.–212° F.; a standard plate count of 4,000–6,000 per gm. was obtained from 'cold filling' at 55° F. or below.

"Both types of pack stored for one year at 0° F. showed little or no decrease in bacterial count after the second month of storage. A storage test at fluctuating temperatures between 20° F. and 30° F. for 15 days, simulating transportation conditions, indicated a significant decrease in bacterial population which was not further reduced by subsequent refreezing at 0° F. Thawing at 40° F. for three days produced only a slight increase in bacterial numbers; however, a net decrease resulted from subsequent refreezing at 0° F. When the frozen product was allowed to thaw completely at 70° F. for one day, the bacterial population increased markedly; it was not significantly decreased by subsequent refreezing at 0° F."

A number of papers appearing in the literature report on extensive studies on bacteriologic examination of uncanned, precooked foods. Most of the authors recommend that official agencies adopt bacteriologic standards as a guide to industry and regulatory officials.

Within the last year the Los Angeles Food Sanitation Advisory Committee and the Board of Health Commissioners reviewed the sanitation and health aspects of the industrial catering business. The announcement that consideration would be given changes in the regulations at a meeting at a health center brought an overflow crowd of 350. A committee appointed by the group worked with the department staff to develop procedures that would permit relaxing the features in existing regulations which prohibited caterers from handling hot foods, other than hot dogs, tamales, and coffee.

A cooperative study showed that poultry and meat pie crusts could be filled with ingredients at or near the boiling point. Paper containers were also filled with stew, etc., and capped before the ingredients cooled. In fact, many foods were capable of being packed, packaged, or prepared at a temperature that prevented contamination by staphylococcus or normal pathogens.

The vehicles were equipped with hot food storage cabinets heated by charcoal or butane. The latter are most desirable since they can be thermostatically controlled. Charcoal-heated chambers were redesigned so they can be kept at the desirable temperature of over 180° F. This was accomplished by providing insulation and arranging charcoal-burning chambers so the temperature could be better controlled. Field checks showed temperature controls compared favorably with those at restaurants with nonthermostatically controlled steam tables.

New regulations were developed to permit handling of hot foods on a trial basis. Hot foods not sold on the first day must be discarded. For the past year the Southern California industrial caterers have been handling a wide variety of hot foods. Using figures given above, their vehicles have served about one hundred million meals in that period. No report of any food poisoning or illness has been attributed to their products.

A large part of two recent issues of the magazine, Food Service, was devoted to frozen foods. One article dealt with the preparation at restaurants of individual portions of frozen foods, both for home consumption and for reheating for service on the premises at some later date. One article giving a number of menus included the statement:[3] "Bonus profits belong to the restauranteur who can convert leftovers into house specialties. For instance, leftover turkey will combine with other ingredients to make a casserole that will not only salvage the meat but build repeat orders." Again, the need for high standards of sanitation is apparent.

The reheating by customers just before serving may or may not destroy pathogens which could get into the products. Not less important than plant and product sanitation is the inclusion of positive instructions in readable printed form with every package of take-home food, covering handling procedure to be followed by consumers. There is a general, though erroneous, belief among consumers that refreezing of defrosted foods in some way causes spoilage and therefore is dangerous. On the other hand, very little is heard about the hazard of permitting defrosted foods, particularly those affording optimum conditions for bacterial growth, to remain for hours at home kitchen temperatures.

There are hot food containers available to caterers and packages and materials are available to enable customers to keep frozen foods cold until they get home. Producers and distributors of cooked foods could, if properly equipped, serve the public with foods that can be kept from the time of production until home consumption at temperatures either below 50° F. or above 140° F. The main solution to the consumer problem is in proper packaging, clear labeling, and public education.

When application was made to the health department for authority to place rotisseries on the counters of meat markets so butchers could sell barbecued chickens and other meats, the following rules were adopted by the Los Angeles Board of Health Commissioners:

1. The meat market shall be located in a building with a closed front. The portion of the building in which the unit is installed shall have smooth walls and ceilings which reasonably comply with requirements for a Food Products Establishment.

2. A separate working space and a work table not used for any raw meat products shall be provided for the handling of cooked poultry. A separate storage cabinet shall be provided for keeping spits in a sanitary condition.

3. The front of the barbecuing device shall not open toward the customer area.

4. The following special facilities shall be provided for storing of barbecued poultry: (a) Barbecued poultry, to be stored and sold "hot" shall be stored in a thermostatically controlled unit maintained at a temperature

of 140° F; (b) Barbecued poultry that is to be sold "cold" shall be stored in a separate area, or in a portion of a refrigerator where it does not come in contact with and is not subject to dripping or contamination from raw meats.

These rules afford reasonable control up to the time the food is sold but, again, public education is the answer to the problem of getting the customer to avoid prolonged holding or storage at temperatures favorable for the growth of organisms.

In so far as possible the take-out foods should be prepared and processed so that storage at improper temperatures or failure to follow instructions on the labels will not cause illness. The present objective might well be to package these foods at a high enough temperature to destroy nonspore-forming organisms. Future attention may well be directed to some more positive procedure of making these foods as safe as commercially canned products, such as use of ionizing radiation to sterilize the product after it is packaged. There is need for further studies in order to be sure procedures adequately protect against botulism. There should be public education to allay the unjustified fears of consequences from partial thawing and refreezing of foods. The public should be advised of those measures which are really important for them to take for their own protection.

Food processors need to restudy their procedures, including ideas concerning refrigeration. For instance, they must realize that small quantities of hot foods properly separated can be placed in a refrigerator while hot, if the unit has sufficient capacity and if fans are provided to produce adequate circulation to quickly cool the products.

Some effort might well be made to accumulate data on actual illness attributed to take-out foods. Currently available data in the National Office of Vital Statistics are not sufficiently in detail to give a clue as to the importance of this problem.

Finally, the public is demanding expansion of official supervision over food sanitation and wholesomeness. Labor, for instance, is urging mandatory inspection and supervision over poultry plant sanitation. Health officials might well determine whether they are devoting enough effort to inspecting and conducting educational programs in the take-out food sanitation field as compared to other food and milk programs.

It may seem inconsistent to the public that federal meat inspection regulations should provide for inspection of beef pies but not require inspection of poultry pies, and that while general Food and Drug regulations apply, there are no special standards or requirements for the take-out foods. The "Ordinance and Code Regulating Eating and Drinking Establishments—1943, Recommendations of the Public Health Service" does not specifically cover this field. More adequate coverage of this subject should be provided in the forthcoming revision now being prepared by the National Food and Beverage Council in cooperation with the Public Health Service.

This review of take-out foods tends to illustrate the reasons that the National Food and Beverage Council is recommending a broad approach to the whole national food sanitation program, an approach which includes the public responsibilities. The subject of take-out foods should be reviewed by health and regulatory officials in cooperation with the industry. Working together, these groups can organize and arrange for the conduct of further research, review regulations and the development of standards, procedures and controls which can be carried out by industry in cooperation with regulatory officials. The program could include consideration of the responsibilities of the public, including public education

programs with respect to home handling, storage, and preparation of foods.

The first paragraph of the "Statement of Objectives" of the Committee on Research of the National Food and Beverage Council certainly applies to the sanitation and health aspects of take-out foods: [4] "To achieve wide agreement by regulatory officials, industry and the public on uniform standards and recommended practices, to save manufacturers, food service operators and the public the expense of complying with unnecessary and unsound requirements, recommendations and restrictions, and to secure wide support for an agreement on those measures which are necessary for health, sanitation and cleanliness, research is of fundamental importance. The main objective of the Committee on Research is to secure technically correct, practical, fundamental data to serve as a basis for further promoting, strengthening and making uniform the national program of food and beverage sanitation." [4]

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Minnesota School Has a Home

With the completion and dedication of the Mayo Memorial building on the medical campus of the University of Minnesota, the School of Public Health for the first time has unified facilities. The school occupies two and a half floors of the new 14-story building, where earlier it was scattered through various buildings on the campus. The new facilities are reported in Minnesota's Health to be "creating an atmosphere conducive to better training, research, and service in all public health fields." Gaylord W. Anderson, M.D., is director of the school.

The new medical building was dedicated on October 21 and 22, 1954. Among its other facilities are a department of physical medicine and rehabilitation, which, on two floors, includes units for physical and occupational therapy and prevocational training.

Industrial Hygiene Milestones in Governmental Agencies

VICTORIA M. TRASKO, F.A.P.H.A.

Particularly fitting, on the fortieth anniversary of the Industrial Hygiene Section, is this review of the factors responsible for the development of official programs of occupational health, together with their present status, and a look into what the future may hold.

My subject — "Industrial Hygiene Milestones in Governmental Agencies"— presupposes numerous markers of progress. Upon reflection, however, one cannot escape the conclusion that in the strict sense of the word there have been but two. The first was the acceptance of industrial hygiene by health departments as one of their responsibilities. The second was the broadening concept of occupational health to embrace the total health of the worker—the recognition that any separation of occupational and nonoccupational influences on the health of man is an artificial, unrealistic one.

In an activity as young as industrial hygiene, perhaps two milestones of this type are the most that one can hope for. Any dearth of milestones within this interpretation, however, has been more than compensated by achievements in the industrial hygiene field over the past forty years. With respect to the growth of official industrial hygiene programs, those years have been tumultuous, characterized by unpredictable ebbs and flows. A review of these years tells a story of a fight against inertia and apathy, an uphill struggle of a young hybrid science to gain a firm footing as a public health program.

Early Development of Official Programs

Official industrial hygiene programs in the United States did not develop spontaneously. Nor were they fathered by a single problem, as was the case, for example, with some of the communicable diseases. It is true that certain universal events, such as the two world wars, served as common stimuli in some instances. In general, however, official programs had their origins in a multiplicity of emergencies.

A long backward look shows a glimmering of recognition of worker health as a public health responsibility as early as 1875. In that year, the Reverend Charles H. Brigham of the Michigan State Board of Health wrote an essay entitled "The Influence of Occupations upon Health," as part of the third annual report of that board.[1] In Ohio as early as 1886 the State Board of Health had a standing committee on "Hygiene of Occupations and Railways" which called attention periodically to hazardous occupations and their deleterious effects on the health of workers.[2] The

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first health agency to send personnel into industry was the Massachusetts State Board of Health.[3] In 1905 the board employed several health inspectors to investigate the dangers of occupations.

In the period 1910–1915 interest in industrial hygiene began to burgeon in earnest. There was growing concern over the poor status of the health of industrial workers in comparison with that of the general population. There was increasing suspicion of a causal or contributory relationship between their jobs and their health. About one out of every three deaths occurred because of tuberculosis, the number one health problem of workers between the ages of 15 and 45.[4] Occupational diseases were being uncovered by the hundreds by Dr. Alice Hamilton in her investigations for the Illinois Commission on Occupational Diseases [3] and by Dr. Emery Hayhurst in his 1913–1914 survey of Ohio industries.[5]

The years 1913 and 1914 saw the passage of the "lead laws" as they were known.[3] In Pennsylvania, Ohio, and New Jersey the laws required periodic physical examinations of workers exposed to lead and imposed upon industry a long list of health regulations aimed at suppressing the lead hazard. The first workmen's compensation and compulsory occupational disease reporting laws were enacted in several states in 1911. California made occupational diseases compensable in 1915.

During this period the U. S. Bureau of Mines was conducting inquiries and scientific investigations concerning mining. The U. S. Department of Labor was releasing publications on occupational poisonings and the Public Health Service was studying the health problems of employees of the garment-making industry. By calling attention to the insanitary conditions then prevalent and the excessive rate of tuberculosis among workers, this study helped pave the way to the abolishment of the "sweat shop." The Office of Industrial Hygiene and Sanitation was formed in 1914 and started its long record of studies of the health of workers in hazardous occupations and industries.[6]

Also, during this period, the Association of Industrial Physicians and Surgeons, now the Industrial Medical Association, and the National Safety Council were organized.[3] In 1914 at the Jacksonville Annual Meeting of the American Public Health Association, a symposium on industrial hygiene was held, resulting in the formation of the Section on Industrial Hygiene. The organization of the section was significant as an early step in relating industrial hygiene to public health.

In the midst of this movement for protection of labor, the States of New York and Ohio initiated industrial hygiene programs. In 1913, at the recommendation of the New York State Factory Investigations Commission, the New York Division of Industrial Hygiene was organized in the State Department of Labor. In the same year the Ohio State Legislature ordered an occupational disease investigation to be made by the State Board of Health.

These were indeed auspicious beginnings, with action being locally inspired instead of being stimulated by external influences. Despite these favorable circumstances, however, there were signs of faltering. After a promising start in 1913, the Ohio program functioned with a reduced organization under a part-time consultant from 1917 until 1936 when it was revived by federal funds. Likewise, the Massachusetts State Board of Health, which had employed health inspectors to investigate working conditions in industry, was forced to relinquish this function. In 1912 the legislature transferred its factory inspection duties to the then State Board of Labor and Industries.[3] Yet, the seeds for growth were there, as

illustrated by the program of the New York Division which grew into one of the largest and strongest in the country.

The lag in the development of official programs continued even through World War I. Although that emergency provided an incentive for considerable industrial hygiene activity, it did nothing to help develop industrial hygiene as an official health or even labor responsibility. Governmental agencies seemed preoccupied with compensation rather than prevention, which tended to overshadow the real problem—that of the total health of the worker. This situation was pointed up in 1934 by Hayhurst in his report of 20 years of progress of the Industrial Hygiene Section of the American Public Health Association.[7] Hayhurst also called attention to the slump that had occurred both in attendance and interest at the 1919 and 1920 annual meetings of this section. While acknowledging that the lack of activity was due in part to the distant location of the meetings, he believed that a major factor was that "other public health workers were not looking upon the health of the worker or of the work place as a part of a genuine program."

In the 20 years following the establishment of the Ohio and New York Divisions of Industrial Hygiene two more states initiated programs. One of these was Connecticut. In 1923 the legislature of that state transferred from the Labor Department to the State Health Department the responsibility for receiving reports by physicians on occupational diseases.[8] In 1927 the State Health Department was authorized to investigate and make recommendations for the elimination or the prevention of occupational diseases, and the following year a Bureau of Occupational Diseases was organized. In 1929 the Mississippi Division of Factory Inspection of the State Department of Health assumed the added function of industrial hygiene, and an industrial health program which included physical examinations of workers in industry was begun. Prior to that time, the division had concentrated on the enforcement of female and child labor laws. Although the Baltimore Bureau of Occupational Diseases was not officially established until 1936, the Baltimore Health Department had for many years been investigating complaints pertaining to industrial operations. Apart from these instances, whatever other industrial hygiene work was undertaken by health or labor departments was limited in character or confined to sanitation inspection.

By the early thirties, evidence of the poor health status of the industrial worker was piling up. A vast amount of research on specific diseases and investigations of health hazards in industry had been carried out by numerous agencies and groups, including the Public Health Service. Information resulting from the studies and researches was widely disseminated but, except in a few progressive industries, was receiving little application.[9]

The unabated course of occupational diseases was dramatically demonstrated by an epidemic of law suits for silicosis at that time. By 1935 casualty companies were underwriting compensation suits for silicosis, totaling many millions of dollars,[10, 11] a situation which may have its counterpart today in the industrial hearing loss problem. Although the silicosis situation was highlighted in part by the depression, it came about largely as a result of the lag in instituting preventive measures which had been developed. By this time 21 states had passed legislation providing for the compensation of some or all occupational diseases. In contrast, only four states had established industrial hygiene units to promote the application of preventive measures in industry.

The mounting silicosis problem influenced directly the creation of three

more official divisions of industrial hygiene and indirectly many more which were to be established under the Social Security Act. In Massachusetts a special Industrial Disease Commission was appointed to study the problem of silicosis compensation in granite industries and foundries.[11] The outgrowth of its report, which revealed extremely bad working conditions, was the passage of a bill creating a Division of Occupational Hygiene in the State Department of Labor and Industry. This division was subsequently established in 1935.

In North Carolina the seriousness of the silicosis problem led to the amendment of the Workmen's Compensation Law to provide schedule coverage for occupational diseases.[12] Funds appropriated for carrying on a dust control program in industry were turned over by the Industrial Commission to the State Board of Health which established a Division of Industrial Hygiene in September, 1935.

The West Virginia Bureau of Industrial Hygiene was organized early in 1936 in the State Department of Health. The Industrial Commission, in administering the silicosis compensation law, needed information on the extent and degree of the silicosis hazard, and provided the State Department of Health with funds for undertaking necessary studies. As in North Carolina, the program was organized with the assistance of the Public Health Service. Both states' budgets were later augmented by Social Security funds which permitted broadened programs.

Development Under Social Security Act

The Division of Industrial Hygiene of the Public Health Service began early to take an interest in the development of industrial hygiene services in state and local governments. Due in large part to the depression its efforts were not overly productive. It continued to try to gain the support of health officers, however, enunciating at the same time the principle of industrial hygiene as an integral part of public health. Other groups were also urging health departments to establish industrial hygiene programs[13] and to utilize the opportunities afforded by the workplace for applying preventive measures to large segments of the adult population. Dr. Haven Emerson, in his 1934 presidential address to this Association, said:[14] "I would persuade you to seize and occupy the largest field of preventive medicine until now excluded from the work of official health organizations in this country. I refer to the prevention of occupational diseases. . . . Let us have the courage to create a Division, an office, a sphere of influence in every health department to be concerned with occupational diseases."

The State and Provincial Health Authorities of North America, which has had an active Industrial Hygiene Committee since 1922, adopted a resolution in 1934 to the effect that occupational disease prevention should be considered a major activity of public health departments.[15] In 1936 the American Public Health Association and the American Medical Association also passed similar resolutions.[10]

The interest and support that had been building up gradually was ignited into action by the passage in 1935 of the Social Security Act. Through funds provided under this Act for the development of health programs in the states, the Division of Industrial Hygiene of the Public Health Service launched a full-scale program to establish industrial hygiene units in state and local governments. From 1936 to 1939, 23 programs were started.

The problem of staffing the newly formed divisions of industrial hygiene even then, as today, was a major one but far from insurmountable. There

were relatively no skilled industrial hygienists. A few universities offered courses, but enrollment as a whole was never great. State health departments for the most part were assigning personnel from their other divisions or employing persons with basic qualifications and training them. In 1936 and 1937 the Division of Industrial Hygiene of the Public Health Service held seminars lasting a month each for new personnel. For many years to come persons newly employed were to obtain their first experience by spending several months in training with an established division.

The Public Health Service further helped to institute or strengthen programs by lending equipment and personnel for as long as one- or two-year periods and by providing consultation services on all aspects of industrial health.

As an outgrowth of the seminar held by the Federal Division of Industrial Hygiene in 1937, the American Conference of Governmental Industrial Hygienists was formed. The members of the conference were instrumental in encouraging the interchange of experiences among official industrial hygienists at a time when there was little precedent for programs of direct services to industry. The work of their numerous technical committees in the development of standards for the practice of industrial hygiene is familiar to all of us. There is no doubt but that the close collaboration and inspiration of its members did much to stimulate the development of industrial hygiene services in this country.

Development of Programs During the War and Postwar Years

The nation's participation in national defense activities and eventual entrance into World War II precipitated the establishment of 31 more state, local, and territorial units during the seven-year period 1940–1946. The emergency, which forcefully brought to light the importance of conserving manpower in order that production may be stepped up and maintained, firmly established industrial hygiene as a public health function.

Further stimulus was provided from 1947 to 1950 when federal grants-in-aid for public health were designated for industrial hygiene and allocated on a proportionate formula basis to each of the states and territories. The designation of funds came at a strategic time. The 60 Public Health Service personnel on loan in the state and local industrial hygiene agencies during the war years were being withdrawn and financial support was needed to permit the recruitment of personnel already trained in industrial hygiene and being released from the Armed Forces. During the three years that the funds were set aside, the development of official industrial hygiene agencies reached an all-time high, with all but two states (Delaware and Nevada) engaging in industrial hygiene work on at least a limited basis.

Present Status of Official Programs

Beginning with the 1950 fiscal year, when the outlook for official industrial hygiene activity was most promising, a gradual retrogression began to set in. This turn of events is difficult to account for specifically, but it is obvious that financial and personnel troubles played their part. For one thing, official agencies were caught in a web of economy drives. The designation of federal funds for industrial hygiene was discontinued and many state legislatures also cut appropriations for public health. Since 1950, chiefly as the result of reduced funds, eight state units with 35 persons were discontinued and 17 others lost 48 persons who were not replaced.

Retrenchments were not universal,

however, for 10 units increased their staffs, with a total increment of 18 persons. Programs in several large industrial states, including Connecticut, California, Michigan, and New York, remained unaffected. In several other states, appropriations for air pollution control, which were turned over to the industrial hygiene units, stabilized financial situations.

Another factor responsible for today's seeming setback in official programs is the slowness with which state and local governments have bettered salaries of their workers. As a result, experienced industrial hygienists have left official agencies and have found employment with better salaries in industry, universities, insurance companies, and trade unions. A substantial number have entered into private consultation work. The Atomic Energy Commission, the Navy, and the Army, in intensifying the worker health programs in their research and industrial installations, also have competed for the available supply of skilled individuals. Even the Point IV Program has made its inroad.

Today, there are 375 professional persons on official industrial hygiene staffs in 39 states, the District of Columbia, Hawaii, Puerto Rico, and 20 local health departments. Ten of the units have staffs with as many as 10, or more, persons, and they account for 45 per cent of the total personnel. Fourteen are one-man units. Nine of the less heavily industrialized states have no programs either in health or labor departments.

In 1949, still a relatively peak year of development, there were 414 professional persons in 46 states, the District of Columbia, Hawaii, Puerto Rico, and in eight local health departments. The numerical decrease in staffs over the five-year period is relatively insignificant, amounting to 39 persons. The real seriousness of the situation, however, lies in the turnover, especially among the state units.

A check of personnel directories shows that state agencies have 67 persons less today than they had in 1949; moreover, only half the 1949 state staffs are still with the same agencies today. With respect to the Public Health Service's Occupational Health Program, only 40 per cent of its 1949 professional staff remain today. All in all, 325 industrial health persons have left official employment during a period of five years.

While this obviously represents a serious loss to official agencies, the situation should not be regarded pessimistically. Most of the persons who have left governmental work have not been lost to the field, but have been absorbed by industry and other private groups concerned with the advancement of industrial health objectives. Their broad experience with official agencies has made them better qualified to assume other positions of responsibility.

There also has been an encouraging increase in official industrial hygiene activity at the local level. Since 1949, 12 local health departments have been known to start programs, bringing their total to 20. In 1949 local industrial hygiene units employed 44 persons; today, their total staff numbers 74. The part that the local health department can play in bringing public health to the work place is well recognized.[17] Only its implementation remains a problem. The present trend augurs well, and the future may well see more activity on the part of local health departments in occupational health.

Accomplishments of State and Local Industrial Hygiene Agencies

When state and local governments entered the industrial hygiene field, their immediate task was the improvement of the working environment and the elimination of hazards. Today, state and local programs are still predominantly

environmental in scope. The need to develop better balanced programs in official agencies is recognized, but the problem is beyond the ability of the states when considered in relation to total resources.

The composition of the state and local staffs is mainly engineering and chemical, accounting for 80 per cent of the total professional staffs. Medical and nursing personnel have at one time made up as much as one-third of the staffs; the proportion at the present time is 17 per cent.

Even with staffs at peak levels, state and local agencies combined were able to reach with services, within any one year, from 8 to 10 per cent of the country's labor force.[18] In 1953 the percentage of workers reached was about the same, but the services included, in addition to the usual plant studies and surveys, a considerable amount of air pollution control and radiological health work.

Five to 10 years ago the integration of industrial hygiene with other public health programs, including nursing, dentistry, tuberculosis and venereal disease control, and nutrition, was undertaken by many of the state and local agencies.[18] However, subsequent personnel losses and turnover, especially among the medical and nursing professions, have prevented the fullest application of the broad concept of industrial hygiene. The result is that there has been little, if any effort, to relate the effects of the working environment to such major public health problems as chronic diseases, mental hygiene, and alcoholism.

Little has likewise been accomplished by official agencies in promoting health services for small plants—the largest single problem facing industrial hygiene today. Several units have actively sponsored demonstrations of in-plant services on a part-time basis,[18] but their continuance has been prevented by the limited facilities of local health departments. Connecticut and Georgia have had some success with sponsoring cooperative health maintenance services in small plants.

Despite their limited staffs and consequent failure to realize the fullest potentials of industrial hygiene, the contributions of state and local agencies to the entire field have been extensive. A basic contribution has been the development of technical methods, procedures, and instruments for use in investigations of health hazards. Through their informational and educational activities the official agencies have widely disseminated knowledge on the causes, prevention, and control of occupational diseases. Although not by choice, they have also rendered a distinct contribution by serving as training centers for personnel who were later to carry on industrial hygiene activities in industry and other private groups. To them, also, goes much credit for the teamwork approach to solving industrial health problems and the fostering of cooperative relationships with other official and voluntary groups concerned with worker health.

Twenty years ago industrial hygiene was a relatively unrecognized profession. Today, it is on a firm footing with other sciences and the vocation of thousands of persons. The services provided by state and local units to from 20,000 to 30,000 industrial establishments annually, together with the participation of these agencies in local institutes, seminars, and teaching activities, have helped to build a solid foundation.

Future Place of Industrial Hygiene

Pioneer industrial hygienists may well look with pride on the record of accomplishment. Their work in lessening the occupational disease toll and in bringing about the institution of con-

trols by industry has been immeasurable and may be regarded as another milestone in industrial hygiene history. The current phase of official industrial hygiene programs undoubtedly reflects an adjustment to changes in the economic and public health patterns of the nation.

The prevention and control of occupational diseases and the promotion of public health among the working population is a legal-moral responsibility of state and local governments. The services of official agencies must be maintained if they are to measure up to this responsibility. Despite the progress made in the industrial hygiene field, the millenium is far from a reality. Occupational diseases and accidents are still occurring. Sickness absenteeism in industry is as serious an economic obstacle as it ever was. Millions of workers are without basic industrial health services. Although the larger industries can solve their own problems, the smaller establishments usually need to depend on the state or local government for assistance. Nor is the situation with respect to the control of occupational hazards static. With the constant introduction of new potentially harmful substances and processes in a changing technology, new hazards must be uncovered and controlled. This is an important governmental function and the industrial hygiene agency can properly stay in business for this work alone, if for nothing else.

A problem that has plagued industrial hygiene programs from their inception is lack of conviction of the value of such programs on the part of those holding the purse strings in the state agencies. This failure to grasp their full significance may have stemmed in large part from the fact that these programs were somewhat alien to, and did not concern themselves with, the commonly recognized public health problems. In the face of personnel and budget problems and indifference, there is need now to achieve even greater understanding of the purposes and potentialities of industrial hygiene to elicit the interest and support necessary to the progress of these programs.

A new generation of industrial hygienists is in the making and the future place of industrial hygiene in public health rests largely in their hands. With diligence, understanding, and support they can chart a course which will be marked by numerous milestones reflecting credit on the past and holding bright promise for the future.

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The General Medical Clinic of the University of Colorado

An Experiment in Medical Education and Medical Care

FRED KERN, JR., M.D.

Patients are people, not just the sites of interesting diseases. Told in illuminating detail is the story of one promising venture in helping medical students to put this human relations concept into practice.

During the past seven or eight years a number of American medical schools have shown an increasing interest in teaching a broadened concept of medicine and medical care. To some extent this has been the result of a widespread but not universal feeling that the modern medical graduate was becoming a mechanized quasi-scientific robot, devoid of knowledge and understanding of the human values traditionally attributed to the good physician. This feeling developed as the natural consequence of several features prominent in undergraduate medical education. During the clinical years in most medical schools, the student is usually limited to two types of experience; the ward clerkship, in which he is concerned almost entirely with seriously ill patients; and the so-called specialty clinic, in which he deals with a part of a patient or an organ system or a disease, but has little or no time for a broader consideration of the individual in whom the disease occurs. Under these circumstances the student does not have an opportunity to know his patient as an individual; to explore and to attempt to understand the many ways in which his environment influences him; to appreciate the importance of emotions for bodily processes; to practice the principles of preventive medicine; or to attempt to understand the influence of the patient's family and community on his well-being. A holistic approach to medicine encompassing these factors has been called comprehensive, or total medicine.

At the University of Colorado, as elsewhere, the concept of comprehensive medicine has been discussed and taught didactically for a number of years. Even though the concept was emphasized, it was recognized by the faculty that the students and staff had no opportunity to put into practice much of what they learned about it. The search for a means to facilitate the teaching and make possible the practical demonstration of comprehensive medicine were thus important influences in the decision to establish the General Medical Clinic.

It has also been widely recognized that, while there has been vast improvement in the medical care rendered by hospitals and medical centers during the past thirty to forty years, most of this improvement has been centered in the

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care of hospitalized patients and the development of supporting ancillary services.

The outpatient clinics of most hospitals have been chiefly organized to suit the doctors' convenience. In the better hospitals they often have been segmented into a series of separate clinics in which a patient could get expert medical care for one of several illnesses or complaints. There is usually no clinic in which a patient can place himself in the hands of a doctor who will be concerned with his total health problem, including the organic medical, emotional, social, and environmental aspects. Often the outpatient clinic serves primarily the purpose of screening patients for hospital admission and neglects the equally serious needs of patients who do not require hospitalization.

The Denver General Hospital, a city agency, and one of the two teaching hospitals of the University of Colorado Medical School, was long aware of the need of improving the quality of medical care rendered to its ambulatory medically indigent patients. Its interest in ambulatory patient service admirably complemented the interest of the Medical School in teaching and demonstrating comprehensive medicine to its students. The converging interests of the Medical School and Denver General Hospital led to the exploration of possible areas of collaboration in the field of ambulatory care and resulted in a plan for the General Medical Clinic which was completed in 1951. Financial support was obtained from the Commonwealth Fund and, after a period of organizational effort, the clinic was initiated in June, 1953.

Organization

Since the practice of comprehensive medical care involves crossing departmental lines without respect for medical school tradition, the clinic was originally developed and has subsequently operated as an interdepartmental function. Its administration is guided by a committee composed of the heads of the Departments of Internal Medicine, Pediatrics, Psychiatry, Surgery, Obstetrics and Gynecology; the dean of the Medical School; the director of the Medical Center; and representatives of the Department of Preventive Medicine and Public Health; and of the administration of Denver General Hospital. This committee is responsible to the Executive Committee of the faculty of the medical school and the Executive Committee of the medical staff of Denver General Hospital.

The clinic staff consists of an educational director, who is an internist; one other full-time internist; five half-time internists; one full-time pediatrician; two half-time pediatricians; a half-time psychiatrist; a part-time surgeon; and a part-time obstetrician and gynecologist. In addition, a number of internists and pediatricians, from both the full-time and volunteer faculty of the medical school, each tutor one or two sessions per week. At each clinic session there are five internists and two pediatricians, and in most, consultants in psychiatry, surgery, obstetrics and gynecology, and various special areas of internal medicine are present. The clinic is, therefore, able to provide in a single setting service to pediatric patients and adult medical patients, as well as most of the consultation services they require. About two-thirds of the patients are adults; the other one-third are children.

The patients are cared for by residents and senior medical students working under the supervision of the staff. Because the clinic was designed partly as an educational experiment and because facilities are not adequate to handle the entire class of 80, only one-half of the senior students participate in the program. One-fourth of the class (20) is assigned to the General Medical Clinic

for two quarters of the academic year (about 23 weeks) and another fourth of the class is in the clinic the other two academic quarters. During this time they spend five one-half days per week actually in the General Medical Clinic.

Six general practice residents each devote five or six half-days per week to the clinic for six months and thereafter two half-days per week for as long as they are in the general practice residency program. Medical residents also participate in the clinic two one-half days per week for a period of from four to eight months.

Objectives of the General Medical Clinic

Because there have been numerous misunderstandings and misconceptions about this type of program, a primary purpose of this paper is to be as specific as possible about our objectives. The term, comprehensive medicine, has been the source of much confusion. Our definition of comprehensive medicine is such that the term can be used synonymously with "sound medical practice," or perhaps "ideal medical practice." Comprehensive medicine simply implies that the physician, or one or more of his team of associates under his direction, must provide or assist in providing whatever is necessary and feasible for the patient's total health. Although we make no pretense of knowing all of the necessary conditions for the achievement of this goal, some of them at least can be partially isolated and described.

It is obvious that the scientific knowledge, intellectual curiosity, conscientious attention to detail, and the constant stimulation of research that have long been responsible for the high quality of all medicine are necessary componeats of comprehensive medicine. The extent to which these are embodied in a service and teaching program is dependent upon the medical staff and upon the presence of a cooperative hospital environment which makes available the necessary facilities. This important objective can only be achieved by utilizing as teachers the same faculty members who are responsible for ward teaching and the clinical research programs of the medical center. The integration of all these components of comprehensive medicine in the General Medical Clinic program is assured by the active participation of most of the full-time and half-time members of the Departments of Internal Medicine and Pediatrics, as well as many of their colleagues in the other clinical departments.

Closely related is another equally important goal. The comprehensive care program must provide an opportunity for medical students, graduate and undergraduate, to learn at least as much about fundamental medical concepts, facts, and skills as in the classically organized specialty clinics. No part of the large body of scientific and empirical knowledge necessary in medical education and practice can be sacrificed. It is believed that in the General Medical Clinic the students learn more, not less, than in the usual outpatient department. The patients they see have the same diseases and the quality of instruction is essentially similar, but the stimulation to learn is greater. Knowledge of clinical medicine cannot be acquired by rote: the best learning takes place in situations that are meaningful. It is well known that the greatest stimulus to learning medicine is to be given responsibility for patients. Students and residents in the clinic are made to feel responsible for their patients and initiative and independence of thought and action are encouraged. A continuing effort is being made to determine objectively whether General Medical Clinic students learn more or less medicine than those not in the program.

Essential to the practice of comprehensive medicine is a continuing rela-

tionship between patient and physician. Continuity of patient contact will facilitate the development of an appropriate physician-patient relationship and contribute to the acquisition of a useful knowledge of the patient as an individual, as well as to an understanding of the course of his disease. Ideally, a single physician should assume responsibility for the patient's total medical problems. He should, in addition to utilizing his own knowledge and skills, become a channel through which other specialized knowledge and advice can, when necessary, be drawn upon for the benefit of the patient. Thus, the physician must assume and retain a central role in all consultations, so that responsibility for the patient is not divided among several individuals. Although theoretically the physician-patient relationship should probably exist for a lifetime, it is impossible to achieve this ideal in any kind of institutional program. In the clinic medical students can follow their patients for as long as six months, residents for as long as two or three years. They may be supervised by the same medical staff throughout this period of time. It is apparent that often this is not long enough for either the student or the patient, but it is, however, a considerably longer time than the usual teaching clinic affords. In the future, student time in the clinic may be lengthened, but it is not feasible to do so at present.

The importance of interpersonal relationships within a family and their effect upon an individual patient does not need emphasis. It is impossible to practice complete medical care without appropriate consideration of these relationships and some understanding of the social structure of families. Even though it could be successfully argued that such relationships are important for every patient, their relative importance varies. In the clinic the relationship of the patient to his family is taken into account in almost every instance. In some cases this is accomplished through working with the patient alone. In others, because of the nature of the emotional or medical problems encountered, it becomes necessary to deal directly with the other family members concerned. When it is learned that other family members need medical or preventive services, arrangements are made for them to come to the clinic and be placed under the care of the student or resident responsible for the original patient. This extension of care to the patient's family is determined solely by the individual needs of the patient or his family. In addition to the fact that he may become concerned with the family problems of any of his patients, each student is routinely assigned a family, selected because it includes at least one chronically ill patient and several children, for whom he serves as family physician for six months. An integrated family program is made possible only through the cooperation of the Departments of Medicine and Pediatrics in encouraging the inclusion of adults and children in one clinic. It is believed that these practices permit the realistic achievement of both service and educational aims. Medical care is extended into families as it is needed and students actively participate in a manner that seems purposeful to them.

An additional necessary condition for the practice of comprehensive medicine requires that a single physician be responsible for the patient not only in the outpatient clinic but whenever necessary in the home and on the hospital ward. At the General Medical Clinic, medical students provide closely supervised home care for the patients in their assigned families. A small number of additional carefully selected patients also receive home care. This does not include all patients for a number of reasons: (1) it is believed that in general better medical care can be rendered in the clinic

than in the home; (2) the time consumed in home visits, if they were made on a large scale, would require the sacrifice of other probably more important activities; and (3) most of our patients do not have homes in which adequate home care is feasible.

With the present organization of most hospitals it is virtually impossible for a physician to be responsible for the same patients on a ward and in a clinic. This goal, however, has been partially achieved by our clinic since the medical students spend three half days per week for 12 weeks—half of their clinic assignment—in a modified clerkship on the medical wards of Denver General Hospital. During this time they are assigned as clinical clerks to their clinic patients who may be hospitalized. In addition, they acquire other ward patients, admitted through the Emergency Room or elsewhere, who are then discharged to the care of the student in the General Medical Clinic. The students, therefore, are able to maintain essentially the same relationship with some of their patients during both their hospitalization and period of ambulatory treatment.

Preventive medicine is not held to be a separate discipline, but is included as an integral part of sound medical practice. All preventive measures of proved value are included in the care of General Medical Clinic patients. In addition, a public health nurse is an important member of the clinic staff. Since her position in a comprehensive care clinic was vague and ill-defined at the beginning, most of her duties have evolved gradually. These include: (1) serving as liaison between the clinic and the public health agencies of the city, particularly the Visiting Nursing Service; (2) promoting health education by teaching certain fundamentals of preventive medicine to many types of patients, including diabetics, pregnant women, and mothers of infants; (3) teaching the same health education measures, as well as the educational technics, to students, residents, and staff; (4) assuming major responsibility for procedures for maintaining contact with patients who do not keep clinic appointments—an important function in the practice of comprehensive medicine; and (5) correctly routing incoming telephone calls from clinic patients who have current medical problems. All of these functions contribute materially to the inclusion of practical preventive medicine in the structure of comprehensive medical care.

The social and cultural aspects of comprehensive medical care are again not treated as specific separate entities, but as component parts of the philosophy and practice of comprehensive medicine. Social and cultural problems are considered in every patient as are organic medical problems and their relative importance is determined for each individual patient. Not only is this encouraged by the medical staff, but both students and staff receive guidance in the interpretation and understanding of these phenomena from a social service staff consisting of one supervisor and two social workers. They do not see every clinic patient, but only those referred for specific problems. (During the first year of clinic experience, 27 per cent of all patients were so referred.) The close relationship with a medical school sociologist who routinely participates in clinic conferences has been a stimulus to a constructive approach to social and cultural influences. Those aspects of a patient's total health that are related to his family, community, and ethnic environment are routinely taken into account. Success in handling these is often limited by the extreme complexity of the problems patients present and by the wide social distance that sometimes exists between patients and clinic medical personnel, making effective communication difficult.

Another important part of comprehensive medicine and an important goal of the General Medical Clinic is the evaluation and treatment of emotional problems. This, again, is not considered as a separate activity, but the emotional problems of all patients are investigated and in so far as possible are handled in accordance with their importance to the individual patient. The routine consideration of the personal problems of every patient is encouraged by the clinic medical and social service staffs. A psychiatrist is present in the clinic for one-half of its sessions to provide expert consultation and guidance. He does not treat patients, but he supervises the students, residents, and medical staff in the management of emotional disturbances, as well as in the understanding of some of the complexities of the physician-patient relationship.

Still other conditions are necessary for the successful practice and teaching of comprehensive medical care. It is apparent that the physician, in this case a graduate or undergraduate student, must have available to him ample time to investigate and to manage all of the many problems that any patient may present. He must not be so overburdened with patients that he does not have time to reflect upon their problems, seek consultation, and read—so that he may furnish optimum care. In the clinic this has been managed by permitting each student as much time as he needs for the initial work-up of a patient—usually around two hours—and by strictly limiting the number of revisits per physician for any clinic session. Although students are allowed one hour and residents 30 minutes for each revisit, they may request as much time as they need for consultation or extensive exploration of the patient's history.

It is apparent that the successful practice of comprehensive medical care requires the development of an appropriate physician-patient relationship. Such a relationship can be achieved only when the student is made to feel responsible for his patient. At first glance, responsibility appears to be contradictory to the clear-cut need for close supervision of students. Experience has shown, however, that they are not contradictory, but rather that they can exist simultaneously without conflict. This is made possible through a clear understanding on the part of students and staff as to the specific functions of each. Students are eager to form a good relationship with patients and the staff is careful not to interfere with the relationship. Although the history of each patient is reviewed in detail, and each patient is examined by at least one staff internist or pediatrician, all advice and recommendations are made to the student, who in turn presents it to the patient. The same procedure is followed by the consultants who also make their recommendations to the responsible student or resident. All of the staff are freely used and, of course, all decisions affecting the welfare of individual patients are approved by them.

Summary

The General Medical Clinic is an attempt on the part of the University of Colorado Medical School and Denver General Hospital to introduce the concept and practice of comprehensive medical care into their educational and ambulatory patient care programs. The objectives of the General Medical Clinic have been outlined. By taking into consideration the total health needs and problems of the patient and by making available to the student the requisites of adequate time, patient responsibility under supervision, and continued experience with the same patients, it is believed that the objectives of the clinic are being achieved.

New Horizons in Sanitary Engineering Research

MARK D. HOLLIS, C.E., F.A.P.H.A.

This penetrating look into the future will open the minds not only of the sanitary engineers, for whom the exploratory projection was undertaken, but of all of us wherever our current concerns may lie.

Sanitary engineering is undergoing a major reorientation to meet the challenge of the changed and changing impacts on man's environment. Not that the philosophy and objectives of sanitary engineering have changed—these have existed since the profession was founded about 1890. Not only are there many new complexities in the environment due to technologic impact, but the tempo of change is accelerating. Just as the practice of medicine has had to be readjusted to conform with major increases in normal life expectancy and with the relative subsidence of infectious disease as compared with organic and disintegrative ailments, so sanitary engineering practice and its supporting research require a stimulating, if not an "agonizing" reappraisal. This transition in sanitary engineering has not been unexpected and, approached with intelligence, need not cause dislocations.

One constant in the social organization is the certainty of change. The ecologic system of which humanity is a part undergoes major changes with every significant shift in balance respecting its individual components. To illustrate, if the economic pressure of metal shortage requires that plastics be produced in quantity to provide structural materials, then it is inevitable that occupational hazards of a different character will appear, that the air will become the carrier of different sorts and amounts of pollutants, that the adjacent streams will receive wastes of a new kind, and that multiple new impacts on the physiology and psychology of man will therefore be presented.

Since its surprisingly vigorous inception as a profession many years ago, sanitary engineering has tended to face its task of maintaining a clean, acceptable human environment in a more or less static sense. The urgency of most situations has required that sanitary engineering practices be mostly expediencies. We have done exceptionally well with the problems of providing clean water and safe food. Efforts in air and shelter have thus far received little support because people have generally not been feeling any "pinch" in these areas. Our current operational concepts have therefore become somewhat inflexible and related to historical mileposts in human progression, rather than to the ever-changing and frequently altogether new relationships occurring between man and his environment.

Now, after a period of revolution in technology, transport, communication,

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social and economic organization, and population shift, we find ourselves to a considerable degree unequipped with the tools and knowledge necessary to cope with our impending job. This thesis probably needs no defense before a group of engineers who have been face-to-face in recent years with sewage and industrial waste problems. Even municipal sewage has assumed new and sometimes baffling characteristics due to the rapid introduction of synthetic detergents in the home and of countless new chemicals in industrial wastes. Even refuse disposal is complicated by changes in nutritional patterns imposed by altered availability of foods. Most of our major streams are receiving industrial and agricultural effluents containing substances not even known to exist on the laboratory shelf 10 years ago—substances about which we know little or nothing of the toxicity, of persistence in the stream, or of detection and measurement. In a phrase, the complexities of man's activities are being reflected in the increasing complexity of his filth.

Sanitary engineering requires new information, new tools, new patterns of survey and assessment, new perspectives to enable assessment of the array of environmental impacts and the development of means for their control. Research can provide these things if the objectives of the engineer are made clear to the researcher and if the engineer is willing and able to sell his needs to the scientific disciplinarian as a series of challenging, intellectually satisfying problems. The lack of scientific "sex appeal" in the classical sanitary engineering milieu of coliforms, MPN's, BOD's, feces, sludge, garbage, undefined wastes, odors, and tastes, is scarcely an incentive to research progress. But couched in terms of the impact of such hazards to health as complex synthetics, radioactivity, atmospheric and aquatic synergism and antagonism, chronic toxicity of trace chemicals, water-borne viruses, air-borne microorganisms, and the like, these offer a very different order of attractiveness to scientists of high caliber.

The products of scientific research, in this as in other fields, seldom find their way into general practice until many years after first delineation of principles. Defenders of the public health correctly tend toward conservatism in acceptance of new practices. It is necessary therefore that research be aimed, so far as possible, at providing the facts, tools, and technics which engineers will need to meet future problems. The membrane filter technic is illustrative. Its general form and procedures for its use are now at least 10 years old; yet more years will pass before its potential is fully applied. This being the case, research objectives—horizons if you will—must be set by reference to current trends recognizing that the environmental system of man is not static. What are the trends perceptible now which can be translated into challenging scientific objectives?

It is almost a boring repetition to point out that our industrial volume is increasing exponentially and that the corresponding amounts of strange substances being dumped into our essential nutrients (air, water, and food) are increasing in proportion. On the other hand, recognition of qualitative change has not been too general. How many times have we seen BOD, dissolved oxygen, MPN, and phenol concentration used as the sole parameters in determining the quality of water receiving wastes from a refinery or penicillin plant, or from a producer of organic synthetics? Although these indicators were suited to the needs of other times, overextension in their use by default is no solution to the newer problems. There is increasing evidence of water-borne virus diseases; yet we have no practicable methods for detecting their

presence in water, nor any firm knowledge of the capacity of ordinary treatment facilities to remove them.

There is abundant evidence of the presence of a tremendous number of new complex organic substances in surface waters and in the air we breathe; however, we have almost no practical means of detection or identification, little knowledge of their fate in streams or processing plants, and even less information as to the quantities tolerable by man over long periods.

There is increasing understanding that mixtures of substances in water and air interact to form new complexes; the circumstances under which these reactions occur are generally not known; and the significance of the end products in terms of human well-being is a mystery. Further to challenge and baffle the researcher certain pairs of simple substances, relatively harmless individually, are known to be toxic when present together. For example, synergisms of the sort observed between copper and zinc are paralleled by antagonisms which render very dangerous materials innocuous when in the presence of other substances. One can no longer be sure of the quality of water, air, or food by application of the classical yardsticks.

Probably no single factor is of such significance in environmental sanitation as the increasing pressure of population. This "changing environment" of past reference is in reality a symptom of man's increasing presence. As he assumes a significant magnitude in relation to his supporting structures, the relative values to man of certain environmental components is subject to change. In some areas the availability of water, as well as its quality, is again becoming a significant factor. In fact, in present-day living the relationship of water to life must consider the quantity and quality factors as inseparable. In a similar way, the exhaustion of fixed nitrogen and phosphates in certain areas has led to reclamation of these components in human wastes as a supplement to food production. Even in our own land the relative decrease in availability of agricultural resources, such as fixed nitrogen, phosphates, and soil conditioners has been reflected in notable increases of dollar value placed on fertilizers. It is anticipated that this trend will continue. As the relative abundance of basic resources decreases, the energy and dollar costs of conservation are more readily borne by the community. Where men suffer for lack of water or food they do not hesitate to expend whatever is necessary to provide these essential items. Again, the expedient factor comes into play.

We are witnessing a substantial surge of interest in processes for recovery and reuse of the valuable materials heretofore regarded as wastes. Dried sludge is finding increased acceptance, vitamin B-12 is being recovered from sewage in quantity, solid wastes are being composted for reutilization in a few places, and noteworthy progress has been made toward conversion of sewage into a usable algal food. These can be regarded as symptoms of a trend which will be accelerated as population pressure increases.

One can foresee the time when the deliberate dispersal and disposal of sewage, garbage, and industrial wastes —without recovery of valuable components—will be looked upon as we now view destruction of forest or pasture land. Availability of prolific energy could, of course, avert such a situation. In summary, where the sanitary engineering objective has been "waste disposal," it may now, and with profit, be shifted to include waste conversion and reuse. In a very substantial way sanitation will be facilitated by showing man how he can supply some of his basic demands by reusing what he already has.

In still another sense technologic

advance and population increase are creating new challenges for the researcher concerned with environmental sanitation. The forms of our social integration are changing rapidly because transport is easier, housing technics are in a state of flux, the urban-suburban population balance is shifting, less favorable land areas are being settled, and availability of essential water supplies may be extended to many new areas with development of salt water reclamation and of weather modification.

The energy requirements for development of a modern civilization have given rise to concern and to efforts to supplement the available reserves by tapping the atom and the sun. Construction of nuclear power reactors, now in progress, introduces into our environment a new type of waste, the impact of which is not yet fully predictable. Should large quantities of radioactive wastes result from these processes, satisfactory means for their disposal—or reuse—will have to be developed.

Such problems related to new technics in social and economic integration are parallelled by human progress in the technics of disintegration. Warfare has always accented the necessity of environmental sanitation. With the advent of nuclear devices and biologic and chemical weapons directed at populated areas, the sanitary engineer becomes a front-line fighter. His equipment for this purpose will have to be unorthodox and for the most part remains to be developed. Technics for sanitary control under forseeable emergency conditions need to be found, reduced to practicality, and incorporated into the armamentarium of every sanitary engineer.

The activation of the Robert A. Taft Sanitary Engineering Center at Cincinnati is indicative of the rapid development of governmental recognition of the need for research and investigation in these and related areas. Obviously, the task is so enormous, the roots of the solutions so various that a large segment of the total research potential of the nation could profitably be devoted to them. It is hoped that the Sanitary Engineering Center may serve in some measure as a hub of national interest in environmental problems by serving as a catalyst for the total academic and industrial research effort.

In conclusion, we must recognize that there is no simple formula which might be applied to secure the necessary progress in sanitary engineering research. As we face the problems of our environment today, emerging with all their complexities, the prospects for sanitary engineering might be considered as either encouraging or discouraging—discouraging because of the extremely rapid development of problems in so many diverse aspects of environment, many of which will have to be approached without much guiding precedent—and encouraging for these very same reasons. It is pioneering that offers the fascinating challenge.

With respect to the Taft Sanitary Engineering Center, two basic philosophies are apparent. First, that an institution of this type cannot attract and retain and promote scientific competency if it is geared to an assembly-line production schedule, and second, that the authorization that established this center and the public moneys that will support it do not provide for the maintenance of a scientific environment solely for the purpose of stimulating original scientific knowledge. These two philosophies need not be incompatible. The problem is to maintain a resultant which represents the proper mean between these two extremes.

Close collaboration of the center with the universities and other research resources of the nation should result in stimulating the research so urgently needed. We look forward to serving our research colleagues in the states, the

universities, and industry in whatever manner will best serve the public interest. The primary energies of the center will be directed toward those problems national or regional in character and generally beyond the resources of individual state institutions and industries.

In developing the pattern of operation for the center, two questions emerge: How best to develop the atmosphere required to attract and retain the kinds of people necessary to accomplish the center's mission? How best to develop and maintain coordination between the applied activities of the center and the more basic research carried out by the universities?

The intelligence with which we are able to manage these two problems in a large measure will determine the success of the enterprise.

Cooking Recipe for a Medical Care Project

The Medical Care Section would like the American Journal of Public Health to note the versatility of its members. At the Buffalo luncheon meeting of the Section, we discovered that our outgoing president was a chef of note. At the meeting he read a recipe which is being submitted for publication in the Journal by popular and vociferous demand of those Section members who were present at the luncheon. The recipe follows:

(Prepared and recommended by Franz Goldmann, M.D.)

Remove all fat from project.
Soak overnight in prudence to remove excess salt.
Rinse repeatedly in honesty.
Place in baking dish buttered with integrity.
Season with a tablespoon of optimism.
Add 2 cups of enthusiasm.
Cook thoroughly with perseverance.
Serve steaming hot with or without a sprinkling of concession.

The Distribution of Cancer Mortality in Ohio

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The purpose of this study is threefold: to obtain some idea of the adequacy of death certificates for epidemiologic purposes, to provide mortality base lines for future studies, and to determine if there is a tendency toward the concentration of cancer sites in geographical areas.

It is the function of a state health department to maintain and protect the health of population groups. Although the routine and traditional provision of services is one approach, the application of epidemiologic principles to isolate and identify detrimental factors is of major importance and of substantial effect. This philosophy has been applied during the past five years by the Ohio Division of Industrial Hygiene actively engaged in the study of several cancer sites as they may relate to the industries within the state. Among the lines of investigation followed was an exploratory study of the geographical distribution of certain cancers in Ohio.[1-3]

The sites selected for the most part comprise those for which there is some evidence to consider industrial processes in their etiology. A few others were selected because of the comparatively little epidemiologic information regarding them. Since the labor force of Ohio is predominantly white males within the 25–64 year age group, the study reported here is largely limited to such persons; however, certain comparisons with native and foreign born of the same ages appeared desirable and have been made. This study represents the major findings in the exploratory investigation.

General Procedures

1. This exploratory study is devoted to an analysis of cancer deaths of selected sites by county among resident white males, 25–64 years of age, as well as white foreign born males. All deaths in the study were assigned to the place of residence of the deceased and only those who were residents of Ohio were included.

2. The data relating to cancers of the lymphatic and hematopoietic tissues, buccal cavity and pharynx, esophagus, stomach, pancreas, prostate, and kidney were taken from the "state summary sheets" for the years 1949–1952. The group represented a test of the readily available data of a department of health as a means of state screening of cancer sites without recourse to any other sources of information.

The data for the cancers of the bladder, larynx, lung, and tumors of the central nervous system, and the leukemias were derived by the "hand-leafing" of all death certificates in Ohio for the years in which the data were not available from the state tabulations on summary sheets for the proper cause of death code as well as color and residence

requirements for the years in the periods 1947–1951 and 1944–1952.*

3. The average population of males 25–64 years of age, by color, in the age groups 25–44, 45–54, and 55–64 was estimated for each county and for Ohio for the period of years included in each study. These estimates were made by assuming an arithmetic increase from 1940 to 1950. The 1951 and 1952 estimates † were apportioned on the basis of the distribution of the 1950 population.

4. Average annual age-specific death rates for cancer of selected sites among Ohio white males were then computed.

5. For each county the expected number of deaths among white males, 25–64 years, due to cancer of a selected site was obtained by applying the observed age-specific death rates of Ohio to the population of the county.

6. For the purposes of the urban-rural comparison, the counties of Ohio were divided into three groups: (a) Eight metropolitan counties with cities of 100,000 population or more in 1950 (Cuyahoga, Franklin, Hamilton, Lucas, Mahoning, Montgomery, Stark, and Summit). Ninety-one per cent of this population is classified as urban; (b) seven urban counties, ones with 50,000, or more, persons living in urban areas (1950 census definition) but not having cities of 100,000, or more, in 1950 (Allen, Butler, Clark, Columbiana, Lorain, Richland, and Trumbull). Sixty-six and two-tenths per cent of this population is classified as urban; and (c) the remaining 73 counties, areas with less than 50,000 persons living in urban areas (1950 census definition) in 1950. (Only 41.4 per cent of this population is classified as urban.)

The expected deaths for each group were obtained by the procedures described under items 4 and 5 and compared with deaths actually observed. Expected deaths so obtained divided into the number actually observed gives a ratio which when multiplied by 100 gives a standardized mortality ratio. This is a ratio, adjusted for age by the indirect method for the total state rate and may be interpreted as a percentage of the state rate. Comparisons of cancer experience among the counties were made by means of this ratio.

7. In comparing the white foreign

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* The code cause of deaths listed in the International Statistical Classification of Diseases, Injuries, and Causes of Death used in the study for the different years was as follows:

Cancer Sites	Fifth Revision	Sixth Revision
1. Lymphatic and hematopoietic tissues	..	200–205
2. Buccal cavity and pharynx	..	140–148
3. Esophagus	..	150
4. Stomach	..	151
5. Pancreas	..	157
6. Prostate	..	177
7. Kidney	..	180
8. Bladder	52B	181
9. Larynx	47A	161
10. Lung (includes trachea and bronchus)	47B-trachea 47C-bronchus	162
	47D	163
11. Tumors of central nervous system	54A and 54B	193
	56D	223
	57D	237
12. Leukemias and aleukemias	74A and 74B	204

† Biometrics and Records Unit estimates (Ohio Department of Health), July 1, 1951, and 1952.

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born males with native white males, the age distribution of the foreign born population in each of the eight standard metropolitan areas in the 1950 census was used as a basis for distributing the foreign born population in the eight metropolitan counties by age, since only the number but not the age distribution of the county foreign born was available. By this means the native and foreign born white males were estimated for the four age groups—25–44, 45–54, 55–64, and 65 and over in the eight counties. Expected deaths for each group were obtained by applying the age- and site-specific death rates for white males residing in all eight counties for the appropriate native and foreign born white population. Comparisons between native and foreign born were then made through standardized mortality ratios computed as previously described. A similar procedure was followed for Cuyahoga County.

Accuracy of Death Certificate Data

Death certificates provide a source of epidemiologic material readily available to all health agencies.[4, 5] Frequent criticism, however, has been directed at their use for this purpose. It therefore seemed desirable to examine the accuracy of cause of death as given on the death certificates. Numerous studies of the accuracy of death certificates have been reported.[6] For the most part these studies deal with some particular hospital experience and do not reflect deaths occurring in a certain area. We have been interested in this question and the effect that "confirmation of diagnosis" would have on the distribution of cancer mortality. Related, too, is the cost and time required in tracing for each case, all previous medical and surgical aspects of diagnosis in order to obtain the necessary data for proper classification of "confirmation." If the confirmation of diagnosis does not materially change the distribution of the areas or population at risk, then the effort might be economically deferred from the initial screening and confined to a smaller group, those in whom an apparent excess of cancer mortality had been uncovered.

In order to get some idea of death certificate adequacy in Ohio a site was selected which is particularly difficult to diagnose, tumors of the brain and central nervous system. Abstracts of all male deaths, ages 25–64, due to primary tumors (cancer, nonmalignant tumors, and unspecified tumors) of the brain and central nervous system which occurred in Ohio in the years 1944–1952 were obtained from the records of the Division of Vital Statistics. These records were reviewed by county of residence, by age, and by cause of death as shown on the death certificate.

Cause of death coding during the period of this study was done under both the Fifth and Sixth Revisions of the International Statistical Classification of Diseases, Injuries, and Causes of Death. Since inclusions under the codes for tumors of the brain and central nervous system in these two revisions were not identical, it was necessary to review the causes of death very carefully to be sure that the data over the nine-year period were comparable and adjustments in coding were made accordingly.

A follow-up was made on the tumors of the central nervous system in an effort to determine whether deaths coded as due to primary central nervous system tumors on the death certificates were actually due to this cause. All available sources were used in an effort to establish the diagnosis conclusively. Letters were sent or personal visits were made to the physician in attendance at the time of death and contact was made with previous physicians or surgeons from whom the deceased had sought medical care. If the person was attended or died in a hospital, the hospital was

visited for additional information and results of any surgery or autopsy.

As a result of the investigations, deaths were classified into five groups for study as follows:

Group I—deaths due to tumors of the brain and central nervous system specified by histological examination following autopsy, biopsy, or surgery.

Group II—deaths due to tumors not verified as primary by histological evidence but either: (1) A biopsy, surgery, or an autopsy was performed and no report of the histological examination was available or could be located, or the report did not provide sufficient histological information; or (2) x-rays, angiograms, or ventriculograms verified the diagnosis of a space occupying lesion and there was no evidence to suggest that the tumor was not primary.

Group III—deaths due to tumors diagnosed as primary only on the basis of case history and clinical evidence.

Group IV—deaths verified as primary tumors of sites in the brain, but not included in the original listing of tumors of the brain and central nervous system.

Group V—deaths due to causes other than primary tumors of the brain and central nervous system. These included: (1) tumors verified by biopsy, surgery, or autopsy as metastatic lesions from such organs as the lungs, skin, breast, kidneys; or (2) lesions which proved not to be tumors, such as aneurysms, blood clots, degenerative processes, and infections.

There were 990 deaths of white males, ages 25–64, in Ohio in the period 1944–1952 which were classified as primary tumors of the brain and central nervous system. These were distributed in the above diagnostic groups and are shown in Table 1.

Of the 990 deaths, 80.2 per cent could be considered to be assuredly primary. The geographical distribution within the state was tested for each of the

Table 1—Confirmation of Diagnosis, Tumors * of the Central Nervous System Among White Male Deaths, Ages 25–64, in Ohio, 1944–1952

Classification of Confirmation	Number	Per cent
Group I	731	73.8
Group II	63	6.4
Group III	88	8.9
Group IV	21	2.1
Group V	87	8.8
	990	100.0

* Deaths coded to the following numbers were abstracted:
1944–1948—code numbers 54A, 54B, 56D, and 57D;
1949–1952—code numbers 193, 223, and 237.

classifications of diagnosis and in combination of groups. There was no difference in the distribution when computed solely from the primary cause of death as listed on the death certificates and when referred to Group I alone or in combination with the other groups. The age pattern did change but not the geography. The statistical significance of differences was not altered for the counties involved.

This method, of course, is only one experience in testing the questions proposed, but in view of the considerable difficulties involved it has been sufficient for us to suggest that this effort should be confined to the smaller groups which have an excess of mortality after the initial screening has been done.

State Rates

Table 2 provides the state rates for the various cancers by age. The increase in rates with age is similar to that generally observed elsewhere and emphasizes the necessity for age standardization of rates when comparing experience in different places or among different racial groups.

The rates of Table 2 were those used

Table 2—Deaths Due to Cancer of Selected Sites, by Site and Age Group, Among White Males, 25–64 Years, with Average Annual Rates per 100,000 Population, Ohio

Cancer Site and Years Included	Total Years 25–64	Age Group in Years 25–44	45–54	55–64
Bladder, 1947–1951				
Number	370	18	88	264
Rate	3.97	0.33	4.09	14.88
Larynx, 1947–1951				
Number	225	22	56	147
Rate	2.41	0.41	2.60	8.29
Lung, 1947–1951				
Number	2,278	198	734	1,346
Rate	24.43	3.67	34.09	75.87
Tumors-central nervous system, 1944–1952				
Number	990	342	320	328
Rate	5.95	3.56	8.24	10.44
Group I, CNS, Number	731	265	232	234
Rate	4.39	2.76	5.98	7.45
Groups I and II, CNS, Number	794	276	257	261
Rate	4.77	2.87	6.62	8.31
Leukemia and aleukemia, 1947–1952				
Number	679	168	200	311
Rate	6.03	2.58	7.71	14.49
Lymphatic and hematopoietic tissues, 1949–1952				
Number	1,067	296	306	465
Rate	14.05	6.72	17.62	32.00
Buccal cavity and pharynx, 1949–1952				
Number	351	26	99	226
Rate	4.62	0.59	5.70	15.55
Esophagus, 1949–1952				
Number	309	10	79	220
Rate	4.07	0.23	4.55	15.14
Stomach, 1949–1952				
Number	1,062	90	258	714
Rate	13.99	2.04	14.85	49.13
Pancreas, 1949–1952				
Number	490	44	140	306
Rate	6.45	1.00	8.06	21.06
Prostate, 1949–1952				
Number	384	1	50	333
Rate	5.06	0.02	2.88	22.91
Kidney, 1949–1952				
Number	270	29	74	167
Rate	3.56	0.66	4.26	11.49

Table 3—Counties Experiencing Cancer Mortality, in White Males, 25–64 Years, Significantly (P = 0.01) Greater than Expected on Basis of State Average in Ohio

Site	Counties with Excess Mortality		
Bladder	Cuyahoga	Hamilton	..
Larynx	Cuyahoga	..	Lucas
Lung	Cuyahoga	Hamilton	..
Buccal cavity and pharynx	Cuyahoga	..	..
Esophagus	Cuyahoga	Hamilton	..
Stomach	Cuyahoga	..	Mahoning
Tumors of central nervous system	..	..	Summit
Lymphatic and hematopoietic tissues	..	..	Montgomery
Leukemia and aleukemia	..	..	..
Pancreas	..	..	..
Prostate	..	..	..
Kidney	..	..	..

in computing deaths expected in subsequent efforts to determine variations in geographical distribution of cancer among the counties of the state.

Geographical Distribution

Table 3 shows the counties of Ohio in which cancer of one or more sites was significantly greater than that observed in the state as a whole. It is noted that mortality was excessive for six sites in Cuyahoga County, three sites in Hamilton, and one site each in Lucas, Mahoning, Summit, and Montgomery. It is also observed that cancer of the pancreas, prostate, and kidney, and the leukemias were uniformly distributed by county. The table does not show it, but cancer of the lung was significantly decreased in Allen, Licking, Perry, and Putnam Counties—all of which are essentially rural. There was also a significant deficit in cancer of the stomach in Franklin County.

It should be noted that all six of the counties which exhibited an excess of cancer of one or more sites are highly urban counties. Two other highly urbanized counties, however, failed to exhibit any excess.

Since Cuyahoga County comprised approximately one-fifth of the state's population in a concentrated area and showed an excess in six of the cancer sites, the computations were rechecked excluding Cuyahoga County from the state to determine what effect this county had on the state in the distribution of cancer mortality for one site—the lung. When this was done, Franklin, Lucas, and Mahoning Counties became significantly high at a probability level of 0.01 or better, whereas no excess was observed in the initial distribution for this cancer site for these counties.

In considering these differences it is necessary to remember that the geographical distribution of cancer may vary depending on the latent period of the particular cancer as well as the environmental factors involved. It may be necessary, therefore, to retest the geographical distribution of a cancer site on a periodic basis and to determine the incidence curves by age groups for the respective counties to detect the pattern in succeeding years.

Table 4—Deaths Due to Cancer of Selected Sites, Observed and Expected,* Among White Males, 25–64 Years, by Site, Age Group, and County, for "High" Counties † of Ohio

Site—County		Total Years	Age Group in Years		
		25–64	25–44	45–54	55–64
Bladder					
Cuyahoga	— O	89	4	18	67
	E	68.6	3.2	15.8	49.6
Hamilton	— O	53	1	16	36
	E	31.7	1.5	8.0	22.2
Larynx					
Cuyahoga	— O	67	9	17	41
	E	41.6	4.0	10.1	27 6
Lucas	— O	21	..	2	19
	E	12.1	1.1	3.2	7.8
Lung					
Cuyahoga	— O	596	43	171	382
	E	420.1	35.5	131.9	252.7
Hamilton	— O	255	27	85	143
	E	196.4	16.8	66.4	113.2
Tumors of central nervous system					
Summit	— O	77	25	26	26
	E	53.8	18.1	18.3	17.3
Lymphatic and hematopoietic tissues					
Montgomery	— O	69	21	18	30
	E	51.0	15.7	14.6	20.7
Buccal cavity and pharynx					
Cuyahoga	— O	92	6	24	62
	E	65.0	4.6	17.6	42.7
Esophagus					
Cuyahoga	— O	99	3	20	76
	E	57.5	1.8	14.1	41.6
Hamilton	— O	46	1	19	26
	E	26.6	0.9	7.2	18.5
Stomach					
Cuyahoga	— O	268	19	63	186
	E	197.0	16.1	45.8	135.1
Mahoning	— O	58	3	14	41
	E	36.2	3.0	8.0	25.2

* Observed and expected number of deaths. Expected numbers do not necessarily add across due to rounding off numbers.

† Counties for which expected number of deaths was less than 5 were not included in this table.

It is realized that, just as a high cancer incidence in a single work department may not affect the cancer rate of a large industry because of the dilution factor, a single industry may not significantly affect the specific cancer rate in a county. This was demonstrated in our study when we found that the lung cancer rate in Lake County was not excessive, although a previous study,[7, 8] had demonstrated an abnormal rate for lung cancer in the chromate plant located in that county. However, when industries are compared with each other,

an abnormality or lead may become apparent which may not be revealed by the total county method. In contrast, when a large group of industries are located in a circumscribed area or county, all engaged in the same essential manufacturing processes or products, it can be expected that the disease pattern of the county will reflect this concentration in the area, if an environmental factor is involved. Some industries or occupations may have a tendency to select certain age groups of workers as well as color for specific occupations. In addition, certain types of workers themselves, such as foreign born of a particular country, tend to group themselves in the same areas of residence and tend to have the same occupations.

To determine whether or not there is an alteration in the age selection of cancer in the counties with excessive rates Table 4 has been constructed. This shows deaths expected and observed in each of the age groups used. Though there appears to be some tendency for the excess to be greater in the older age groups this is not uniform.

Urban-Rural Influence on Geographical Distribution

Since it has been shown that the Ohio counties with excess rates for one or more sites were highly urbanized counties, and since it is well known that risk for a number of cancers increases with increase in urbanization,[1, 2] it was deemed desirable to examine the possible influence of urbanization on cancer in Ohio. This has been accomplished through computation of standardized mortality ratios for each cancer in counties grouped in three classes of urbanization. The results are given in Table 5 for the three groups; namely,

Table 5—Standardized Mortality Ratios * for Cancer of Selected Sites in Urban and Rural Counties of Ohio, White Males, 25–64 Years

Cancer Site and Years Included	Eight Metropolitan Counties †	Seven Other Urbanized Counties †	Rural Counties †
Lung, 1947–1951	123	82	69
Esophagus, 1949–1952	133	83	51
Buccal cavity and pharynx, 1949–1952	120	96	68
Larynx, 1947–1951	124	92	63
Tumors of central nervous system, 1944–1952	110	97	84
Bladder, 1947–1951	118	83	77
Stomach, 1949–1952	106	97	91
Pancreas, 1949–1952	105	121	86
Kidney, 1949–1952	115	55	90
Lymphatic and hematopoietic tissue, 1949–1952	106	94	93
Leukemia and aleukemia, 1947–1952	106	97	92
Prostate, 1949–1952	103	100	95

$* = \frac{\text{Observed Deaths}}{\text{Expected Deaths}} \times 100$

† = County definitions: Eight metropolitan counties = ones with cities of 100,000 or more in 1950 (91 per cent urban).

Seven urban counties = ones with 50,000 or more persons living in urban areas (1950 census definition), but not cities of 100,000 in 1950 (66.2 per cent urban).

Rural counties = remaining 73 counties in Ohio, i.e., ones with less than 50,000 persons living in urban areas (1950 census definition) in 1950 (41.4 per cent urban).

Table 6—Cancer Sites with Significant Differences * in Mortality Between Urban and Rural Counties in Ohio, White Males, 25–64 Years

Eight Metropolitan Versus Rural Counties	Eight Metropolitan Versus Other Urbanized Counties	Seven Urbanized (Excluding Metropolitan) Versus Rural Counties	Fifteen Urbanized (Including Metropolitan) Versus Rural Counties	Eight Metropolitan Versus All Other Counties
Lung	Lung	—	Lung	Lung
Esophagus	Esophagus	—	Esophagus	Esophagus
Buccal cavity	—	—	Buccal cavity	Buccal cavity
Larynx	—	—	Larynx	Larynx
Central nervous system	—	—	Central nervous system	Central nervous system
Bladder	—	—	Bladder	Bladder
—	Kidney	—	—	Kidney

Difference not significant at P = 0.01 or better for cancers of the stomach, pancreas, lymphatic and hematopoietic tissues, prostate, and for the leukemias.

* Probability = 0.01 or better.

eight metropolitan counties (91 per cent urban population); seven urbanized counties (66.2 per cent urban); and the remaining "rural" counties (41.4 per cent urban).

Table 5 shows that for 10 of the 12 cancers studied mortality ratios increase with increase in urbanization. The numerical gradient of increase varies among the sites and is sharpest in cancer of the esophagus and least pronounced for cancer of the prostate. For two cancers — pancreas and kidney — the gradient is interrupted by divergence in the ratio for the middle group of counties.

When the results of tests of statistical significance of the gradients are examined (Table 6), it is found that the difference between the most urban and the most rural ratio is not significant for cancer of the stomach, pancreas, and prostate, for the leukemias, or for tumors of the lymphatic and hematopoietic tissues. The urban-rural gradient for the other cancers, however, is confirmed.

These considerations add significance to the excess for cancer of the stomach in Mahoning County, tumors of the central nervous system in Summit County, and tumors of the lymphatic and hematopoietic tissues in Montgomery County. They also indicate the desirability of re-examining mortality from all of these cancers in the highly urban counties on the basis of possible individual county variation from the combined urban counties' experience.

Foreign Born Versus Native

In any study of cancer in Ohio, in which one general objective is development of leads regarding possible hazards of industrial cancer, consideration must be given to another large segment of population—the foreign born. Since most of the foreign born reside in the eight metropolitan counties, sufficient foreign born life experience is available for comparing their cancer mortality risk in these counties with that observed in the native white. This has

Table 7—Standardized Mortality Ratio, Lung Cancer Mortality Among Native White and Foreign Born White Males, 25-64 Years, in Ohio, 1947–1951

	Eight Metropolitan Counties *	
	Native Whites	Foreign Born Whites
Standardized mortality ratio	91	131
Observed deaths	1087	463
Expected deaths	1196.5	354.0
	Cuyahoga County	
	Native Whites	Foreign Born Whites
Standardized mortality ratio	88	119
Observed deaths	324	272
Expected deaths	366.5	229.5

Differences between the two nativity groups are significant at $P = 0.001$ or better for both the 8 metropolitan counties combined and for Cuyahoga County.

* Cuyahoga, Franklin, Hamilton, Lucas, Mahoning, Montgomery, Stark, and Summit.

been accomplished to date, by the method previously described, only for cancer of the lung and the results are given in Table 7.

This table shows that observed lung cancer mortality is lower than expected for native white and greater than expected for foreign born and the difference between the two is highly significant statistically. This reveals that the age-adjusted rate in the foreign born is significantly greater than that observed in the native white.

Lombard and Doering [9, 10] have previously shown that mortality from all cancer in Massachusetts was greater in the foreign born than in the native white; however, lung cancer was not studied specifically in their data. In so far as we know, the nativity difference in lung cancer mortality found in Ohio is the first evidence of this kind. In future studies of lung cancer, in Ohio at least, nativity must be considered. In addition, this observation poses additional avenues of investigation to determine what role areas of residence, occupation, diet, habits, etc., influence the excess in foreign born, particularly in the period 20–30 years prior to the death of the lung cancer cases. A comparison by sex of the native and foreign born, particularly the wives of the deceased lung cancer cases, would seem to be indicated to determine whether the females had the same experience. If this observation does not apply to the females, then environmental factors not common to both sexes but solely associated with the males, such as occupations, would merit investigation.

Although this influence of cancer mortality of foreign born may extend to other sites, up to the present we have only tested one other site—tumors of the central nervous system in one other urban area, Summit County. We found no difference among the native and foreign born in Summit County either by cause of death as listed on the death

Table 8—Deaths from Cancer of the Lung Among White Males, 25–64 Years, Classified by Economic Tenth and Age Group, Cuyahoga County, Ohio, 1947–1951

Economic Tenth	Total Years		Age Group					
	25–64 *		25–44		45–54		55–64	
	Observed	Expected	Observed	Expected	Observed	Expected	Observed	Expected
Two highest	98	138.2 †	10	8.3	32	44.9	56	85.0 †
Six middle	370	373.4	21	29.1	101	104.2	248	240.1
Two lowest	123	79.4 †	12	5.6 ‡	37	20.9 †	74	52.9 ‡

* Excludes 5 deaths, tracts unknown.
† Difference significant at P = 0.01 or better.
‡ Difference significant at P = 0.05 or better.

Table 9—Deaths from Cancer of the Lung Among White Males, 25–64 Years, Classified by Education Tenth and Age Group, Cuyahoga County, Ohio, 1947–1951

Education Tenth	Total Years		Age Group					
	25–64 *		25–44		45–54		55–64	
	Observed	Expected	Observed	Expected	Observed	Expected	Observed	Expected
Two highest	100	133.9 †	10	8.0	32	42.6	58	83.3 †
Six middle	332	353.4	23	27.5	87	102.3	222	223.7
Two lowest	159	103.6 ‡	10	7.5	51	25.2 ‡	98	71.0 ‡

* Excludes 5 deaths, tracts unknown.
† Difference significant at P = 0.05 or better.
‡ Difference significant at P = 0.01 or better.

certificate or by histological confirmation of diagnosis for this particular tumor site for the combined age group 25–64.

Analysis of a Smaller Geographical Unit—A Single County

A separate study was made of Cuyahoga County, but the complete details will be included in another report. In Cuyahoga County an attempt was made to determine the socioeconomic differences within a smaller geographical unit having the largest urban concentration.

The cancer deaths for each site were tabulated by census tract in which the deceased resided at the time of death. For study the census tracts were grouped by three methods as follows: (1) Socioeconomic areas. The county was divided into areas on the basis of combined socioeconomic status,[11, 16] color, and nativity. Each census tract was "rated" by means of four quantities: median family income, occupation index, color, and nativity. This method of grouping the census tracts yielded 16 areas. (2) Economic tenths method. The county was divided into tenths on the basis of median family income in each census tract.[12] (3) Education tenths. The median school years completed in each census tract were used as the basis for division of the county into tenths.[13]

Some of the findings are shown in Tables 8 and 9. In general, it was found that the excess mortality for lung cancer occurred in different socioeconomic areas within the county. In the second and third methods as shown by the tables a statistically significant difference occurred in lung cancer among the lowest economic and education tenths groups. The highest groups had a difference in the opposite direction between observed and expected deaths. The other cancer sites studied—bladder, tumors of the central nervous system, and the leukemias—were not significant in the economic and education tenth methods, and larynx remained questionable because of the small figures. A relationship between cancers and economic status has previously been demonstrated.[14, 15]

It appears that we have identified within the limitations of our data certain characteristics which are associated with the high lung cancer mortality in Cuyahoga County. These characteristics are: (1) foreign birth, (2) low economic level, and (3) low education level.

Summary

An analysis of death certificate accuracy was made by determining the confirmation of diagnosis of 990 male deaths due to tumors of the central nervous system which occurred in 1944–1952; 80.2 per cent were assuredly primary.

A study of the geographical distribution of twelve cancer sites within the State of Ohio revealed there were differences in some sites but not in all sites. It was also observed that the counties which showed excesses in cancer mortality for the most part were counties with large urban populations.

The study of the urban-rural relationship revealed that for most cancer sites, higher mortality ratios occurred in the metropolitan counties than in the rural areas for lung, esophagus, buccal cavity and pharynx, larynx, tumors of the central nervous system, and bladder. There was no difference between the metropolitan and rural counties among the following cancer sites: stomach, pancreas, lymphatic and hematopoietic tissues, leukemias, and prostate.

For the eight metropolitan counties in Ohio, a comparison of the white native and foreign born males, ages

25–64, revealed a significant excess in lung cancer mortality among the foreign born.

In Cuyahoga County the characteristics found to be associated with an excess of lung cancer mortality were: (1) foreign birth, (2) low economic level, and (3) low education level.

In conclusion, we believe that state health departments are missing an excellent opportunity to apply readily available death certificate data to the epidemiologic study of cancer and other noncommunicable diseases.

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PHS Nutrition Consultant Services

Consultant nutrition services are available to health departments, voluntary agencies, hospitals, professional associations, and colleges and universities from the Division of Special Health Services, Bureau of State Services, USPHS. The services are provided through the Chronic Disease Program and the Heart Disease Program. Arrangements are made by the state health department through the medical director in the Public Health Service Regional Office.

Types of service that may be obtained include assistance in appraising community nutrition services, in planning and evaluating educational materials, in planning institutes for professional people, and in planning nutrition studies of persons with chronic disease, welfare recipients and others.

A Study of Periodic School Medical Examinations

I. Methodology and Initial Findings

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Are the avowed purposes of periodic medical examinations of school children realistic, or are they rationalizations advanced to justify anachronistic procedure? A study has been undertaken to provide answers to this and collateral questions.

School health services originated as the response to a need for control of the sanitary problems and communicable diseases that disrupted group living in the community and in the school. As they evolved, they assumed other functions: first, the early detection and follow-up of children with adverse health conditions; later the individual health teaching of pupils and parents and the education and counseling of school staff in matters relating to the health of pupils. These changes in the purpose of service are reflected in changes of medical titles: the school physician was first known as a medical inspector, next as a medical examiner; today he is often referred to as a medical adviser. It is evident that the amount of time and skill a physician can devote to advisory and counseling services is conditioned by the amount of time and skill he must devote to the periodic examination of school children per se.

The purpose of a periodic medical examination or appraisal, as distinguished from medical examination of a pupil referred for cause, is to detect adverse conditions in the school population, to advise concerning the need for care of the conditions detected, and (in the process of performing the appraisal) to educate parent and child. Are these purposes realistic today or are they rationalizations advanced to justify an anachronistic procedure? How necessary is periodic medical examination of the entire school population (a costly investment of professional skills) for detecting adverse conditions? How frequently should such examinations be performed to achieve their stated purposes? What is the annual increment of adverse conditions detectable only by medical examination in a school population? How many conditions, detected by such an examination, are already under care and so render case-finding and counseling services superfluous? Since the major responsibility for health of the school child rests with his family, does the periodic school medical examination strengthen or weaken that responsibility? What educational

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values, if any, can be said to result from periodic medical examinations?

Answers to these questions should help to define more accurately the role of periodic medical examinations in the school health program and clarify the role of the school physician. This report will describe the plan of a study exploring some of these questions during the first four years of elementary school experience. The findings of the first of four periodic medical examinations will be analyzed.

Materials and Methods

The city of Rochester, N. Y., with a population of 332,488 in 1950, had an elementary school population of 42,000 in the fall of 1952. These children attended 39 public and 31 nonpublic (parochial) schools. There were 6,906 children in the first grade of these 70 schools.

Both public and nonpublic schools receive health services through the Rochester Health Bureau. The Rochester elementary school health program calls for a medical examination at the time of school entrance (usually kindergarten) and a periodic medical examination in the fourth grade. Energetic efforts are made to encourage parents to have these examinations performed by private physicians.

The 70 elementary schools in Rochester were placed in one of three socioeconomic groups: upper, Group I; middle, Group II; lower, Group III. These groupings were made on the basis of neighborhood characteristics as expressed in 1950 census data and in the judgment of the public health nurse serving the neighborhood and its school. From each group four or more schools were selected so that the first-grade population in each group of selected schools would represent a 15 per cent sample of the total first-grade population of the base group with respect to both public and parochial schools. The final sample consisted of 13 schools.

Beginning with the first-grade population in the school year 1952–1953, annual examinations have been or will be performed on the same children for a period of four years. Each year after the first a "control" group at the same grade level, but attending other schools, will be examined. All examinations have been or will be performed by the same pediatrician (R.A.L.) using the same technics and standards of judgment. Additional studies, based on interviews with parents and testing of children, are planned as a method of evaluating the educational aspects of these examinations.

The medical examinations performed for this study consist of a complete and careful medical history and a physical examination of all systems (including fundoscopic examination). These procedures require an average of 30–40 minutes per parent and child to perform. They are done without reference to the school medical records. On the basis of this appraisal, a decision is made whether an adverse condition affecting health and justifying medical care or continuing medical observation is or is not present. The diagnosis of an adverse condition is made only if the examining pediatrician is thoroughly convinced of its existence on the basis of all information at hand. In cases of doubt, referral for further study is made. Thirty-three of the first 1,056 children examined were referred because of such uncertainty. Of this number, nine were eventually classified as healthy and are so recorded in the data to be presented.

A decision is also made whether the children with adverse conditions are or are not receiving appropriate medical care. This decision is based upon information supplied by the parent and confirmed by the physician or agency rendering care.

After these decisions are made, the

Table 1—Number of First-Grade School Children and Percentage Distribution by Socioeconomic Group and Status of "Study" Examination (13 Schools, Rochester, N. Y., 1952–1953)

Status of "Study" Examination	Number of Children	Percentage Distribution			
		Total (1,086)	Group I (364)	Group II (313)	Group III (410)
Total examined	1,056	97	99	97	95
Parent interviewed	(887)	(81)	(92)	(80)	(72)
Parent completed questionnaire	(169)	(16)	(7)	(17)	(23)
Not examined	30	3	1	3	5
Total	1,086	100	100	100	100

school medical records are reviewed and classroom teachers and public health nurses serving the schools are interviewed. On the basis of this additional information a decision is made whether or not an observed adverse condition is known to exist by the school. If an adverse condition is unknown to the school or not currently receiving appropriate medical care, the reasons for this apparent failure of communication or service are determined whenever possible.

Because the purpose of this study is to define only the role of a periodic medical examination requiring the professional time and skill of a physician, acute infections and minor skin diseases and adverse conditions of the teeth are not tabulated in our results. Since tests for visual acuity and hearing loss and other possible laboratory screening tests (such as Hb, urinalysis, and tuberculin tests) do not require the services of a physician, they were neither performed nor evaluated in this study.

Because of the wide variety of medical diagnoses it was necessary to group conditions found into diagnostic categories. The categories used are based, in general, on the "International Statistical Classification of Diseases, Injuries and Causes of Death," [1] the main exception being that congenital anomalies of bones and joints and residual paralysis resulting from poliomyelitis are included under orthopedic conditions in the data to be presented.

Results of Initial Examination

This initial report is based on an examination of 1,056 children, 97 per cent of the total 1952–1953 first-grade population of the 13 selected schools, 1,027 of these examinations being performed on first-grade children during the school year 1952–1953. The remaining 29 children, although registered as first graders in the same school, were not examined until the school year 1953–1954 when in the second grade.

Eighty-one per cent of the children were examined with a parent present and medical history obtained directly by the examining pediatrician assisted by a public health nurse. In the remaining cases, parents completed a detailed questionnaire relating to the medical history of the child. The percentage of examinations performed with a parent present varied from 92 per cent in Group I to 72 per cent in Group III (Table 1).

All but 59 of the first-grade children examined had been previously examined when they were kindergarten students as a part of the regular school health

Table 2—Frequency Distribution of 1,056 First-Grade School Children by Status of Prior School Entrance Examination and Socioeconomic Group (13 Schools, Rochester, N. Y., 1952–1953)

School Entrance Examination Prior to Present Study by:	Total	Group I	Group II	Group III
Family physician	516	244	143	129
School physician	370	76	105	189
Unknown	111	25	36	50
No previous examination	59	13	18	28
Total	1,056	358	302	396
Ratio: Family M.D./School M.D.	1.40	3.21	1.36	0.68

program. For these prior examinations, the ratio of those performed by family physician to those performed by school physician was 1.4, varying from 3.2 in Group I to 0.68 in Group III (Table 2).

Of the 1,056 children examined, 221 (21 per cent) were found to have a condition affecting health adversely; 20 children had adverse conditions in more than one diagnostic category. The over-all percentage of children with adverse conditions did not vary significantly by sex or socioeconomic group (Table 3).

An adverse orthopedic condition was found in 4.8 per cent of the children. Two-thirds of these conditions consisted of pronated feet and extremely flat arches, usually accompanied by knock-knees. These conditions of the feet were not considered significant unless accompanied by symptoms or clearly in-

Table 3—Number of Adverse Conditions Among 1,056 First-Grade * School Children and Percentage of Children with Given Condition by Socioeconomic Group and Diagnostic Category (13 Schools, Rochester, N. Y., 1952–1953)

Diagnostic Category of Adverse Condition	Number of Children with Given Condition	Percentage of Children with Given Condition			
		Total (1,056)	Group I (358)	Group II (302)	Group III (396)
Orthopedic	51	4.8	5.6	6.6	2.8
Allergic	41	3.9	6.4	2.0	3.0
Emotional	36	3.4	4.5	3.3	2.5
Ear, nose and throat	34	3.2	2.0	4.6	3.3
Nutritional	25	2.4	2.2	1.7	3.0
Genito urinary	15	1.4	0.8	1.6	1.8
Cardiac	9	0.9	1.1	0.7	0.8
Neurological	9	0.9	0.6	1.3	0.8
All other	22	2.1	1.7	2.0	2.4
Total	221	21.0	21.5	22.8	18.7

* Includes 29 children examined when in the second grade

Table 4—Status of Care of 210 Previously Examined First-Grade Children with One or More Adverse Conditions by Socioeconomic Group (13 Rochester, N. Y., Schools, 1952–1953)

Status of Care	Number of Children	Percentage Distribution in S-E Group			
		Total (210)	Group I (73)	Group II (67)	Group III (70)
Under care	164	78	81	72	80
(known)	(129)	(61)	(55)	(57)	(70)
(unknown)	(35)	(17)	(26)	(15)	(10)
Not under care	46	22	19	28	20
(known)	(25)	(12)	(12)	(13)	(10)
(unknown)	(21)	(10)	(7)	(15)	(10)
Total	210	100	100	100	100

terfering with gait and coordination. Postural abnormalities (lordosis, scoliosis) were considered significant only if accompanied by structural change. No purely functional defects of posture are included in the orthopedic category. The prevalence of orthopedic conditions in Group III is lower than that in Groups I and II, the difference being significant at the 2 per cent level.

One or more manifestations of allergic disease occurred in 3.9 per cent of the children. Asthma was diagnosed in almost one-half of this group, eczema in one-third, and allergic rhinitis in one-quarter. The prevalence of allergic conditions in Group I is higher than that in Groups II and III, the difference being significant at the 2 per cent level.

Those considered to have an emotional disorder were 3.4 per cent of all the children. This is a conservative figure, since the diagnosis was made only if warranted by a clearly definable pattern of disturbed behavior or personality, such as enuresis, tics, extreme aggression, hostility, withdrawal, or anxiety. The variation in prevalence by socioeconomic group is not statistically significant.

Of the 34 children considered to have an adverse condition of the ear, nose, and throat, 29 had chronically infected adenoids and tonsils. This diagnosis was made only if warranted by a history of severe, frequent sore throats and cervical nodes, chronic mouth breathing, or hearing loss. A diagnosis was not made solely on the appearance of the oropharynx.

Nutritional disorders occurred in 2.4 per cent of the children. This condition was diagnosed only if warranted by clinical evaluation of the whole child, including familial characteristics, dietary intake, and physical examination findings. About one-half of the children in this group were "below-par" in energy, muscle tone, and general appearance. The remainder were clearly obese.

There were nine children with significant cardiac disease. This diagnosis was made only on the basis of a diagnostic work-up, more extensive than the school examination itself and performed in the office of family physician or pediatric clinic. Functional cardiac murmurs were not considered adverse conditions.

Of the 221 children with adverse conditions, 210 had been previously examined as kindergarten students by a family or school physician. The significance of selecting these 210 children from the remainder of the previously

examined school population depends upon whether or not they were already receiving appropriate medical care and whether or not their adverse conditions were already known to the school health service.

Of these 210 children, 78 per cent were already receiving medical care and an additional 12 per cent had an adverse condition known to the school health service, although not under care (Table 4). The proportion of Group II children receiving care was less than that in Groups I or III, although the difference is not significant statistically.

A child with an adverse condition was more likely to be receiving care if his "school entrance" examination had been performed by a family physician than if it had been performed by a school physician (Table 5). This was true in all three socioeconomic groups and the over-all difference was significant at the 2 per cent level. This difference in status of care did not seem to be dependent upon inferior case finding by a school physician. The adverse condition of 16 of the 83 children previously examined by a school physician was already known to the school (and thus "found") even though the condition was not under care. This was true of only six of the 106 children previously examined by a family physician.

Of particular importance from an evaluative standpoint are the 21 children, selected out of 997 previously examined children who, at the time of the special examination performed for this study, were found to have an adverse condition neither known to the school nor receiving medical care. These are the only children whom this periodic medical examination can be said to have benefited from a case-finding viewpoint. The remaining 976 children were apparently healthy, had a condition already under care, or had a condition

Table 5—Status of Care of 210 Previously Examined First-Grade Children with One or More Adverse Conditions by Type of Previous (School Entrance) Examination and Socioeconomic Group (13 Rochester, N. Y., Schools, 1952–1953)

Socioeconomic Group	Prior Examination Performed By:	Number	Percentage Distribution of Status of Care		
			Under Care	Not Under Care	Total
Group I	Family physician	49	82	18	100
	School physician	15	74	26	100
	Unknown	9	89	11	100
	Total	73	81	19	100
Group II	Family physician	37	79	21	100
	School physician	25	56	44	100
	Unknown	5	100	..	100
	Total	67	72	28	100
Group III	Family physician	20	90	10	100
	School physician	43	72	28	100
	Unknown	7	100	..	100
	Total	70	80	20	100
Total	Family physician	106	82	18	100
	School physician	83	67	33	100
	Unknown	21	95	5	100
	Total	210	78	22	100

already known to the school (and therefore capable of being followed up without "rediscovery").

Ten of these 21 children had conditions (six in the orthopedic category) which obviously had existed for some years and had been missed or unreported at the prior "school entrance" examination. Five children had conditions (in emotional and ENT categories) which were grossly symptomatic during the previous school year, but which had not been reported to the school health service. In three cases (one mesenteric cyst, one postpoliomyelitic residual paralysis, and one chronic tonsillitis) the dates of onset were uncertain. The remaining three children had an adverse condition that had developed since the previous examination and which could not have been observed by the classroom teacher. Two of these children had Baker's cysts of the knee. The third child had epileptic seizures which occurred only at night. In all three instances the parent was aware of the existence of the adverse condition and its onset was within the past three or four months.

Discussion

The prevalence of adverse conditions among school children has been generally reported to be much higher than was observed in this study. There are three possible reasons for this discrepancy. Previously published reports and currently available data [2, 3] deal with an entire school population, whereas the data here reported deal only with the first-grade population. In the second place, our data, by definition, have excluded children with dental caries, refractory errors, and hearing loss. Dental caries is practically universal and the remaining two conditions are known to be at least as common as any of the diagnostic categories covered in this report.

However, even if these conditions are taken into account, certain obvious differences remain. Allergic conditions have not hitherto been reported with such prominence in a school population. Nutritional, ear-nose-throat, and cardiac conditions generally receive much more prominence than our data give them. It is believed that these differences are due to the unusually careful medical examinations (particularly the medical history) and the diagnostic follow-ups on which our criteria and data are based. The prevalence data presented are based on a relatively small number of children. Their principal value lies in the base line established for future reports of this study. Such reports will be able to compare data gathered by the same observers using the same methods.

A somewhat surprising finding was the lack of relationship between over-all prevalence and status of care of adverse conditions and socioeconomic group. It should be remembered in this connection that our data, by definition, do not necessarily reflect acute illnesses, disabling illnesses, or absenteeism which have been shown to be related to socioeconomic group.[4, 5] The meaning of observed differences in the prevalence of specific diagnostic categories (orthopedic and allergic) by socioeconomic group is not clear.

Reports of "defects" found at periodic school medical examinations do not ordinarily take into account whether or not an observed condition is already receiving care. Yet, this is of considerable significance, since if a condition is already under medical care, this fact, as well as the existence of the adverse condition itself, could have been ascertained without performing a medical examination. The finding that four out of every five children with an adverse condition fell into such a category increases the significance of this point.

It was not surprising to find that a child with an adverse condition whose

"school entrance" examination had been performed by his family physician was more likely to be receiving care than a child previously examined by a school physician. This may be due to the fact that the parent who has sought out private medical services in the past is more likely to have done so because of the adverse condition itself or more likely to have followed medical advice. It may also be due to the inherent follow-up advantages of periodic examinations performed by private physicians.

More than half of the children with an adverse condition not receiving care were already known to the school to have had this condition. The reasons why they were not under care will be discussed in another report. A detailed analysis of the 21 children with adverse conditions that were neither known nor under care has been presented. It disclosed that only one child, an epileptic, can be said to have had a serious condition requiring prompt medical attention that was neither present at the time of the "school entrance" examination nor could have been discovered through teacher referral. The significance of discovering even this child is questionable. Her mother was concerned about the nocturnal seizures and had sought help from a druggist. She stated that she was waiting for the examination at school in order to discuss the seizures with a doctor. If she had not known of the pending school examination, she might have sought medical care sooner.

It is important to recognize that the inferences that can be drawn from this first report of a four-year study relate only to a periodic school medical examination performed on first-grade children who had been examined on entering kindergarten the previous year. There seems no doubt that complete examination of this entire grade was valueless from a case-finding standpoint. Further reports will extend these observations and inferences through the fourth grade of elementary school.

Summary

1. A plan of study, seeking to evaluate periodic school medical examinations in a sample of 13 schools in an urban community has been described. The entire first-grade population of these 13 schools has been examined carefully, and this examination will be repeated at annual intervals through the fourth grade.

2. The results of the first-grade examination have been analyzed by diagnostic category, socioeconomic group, and status of medical care at the time the examination was performed. The significance of these results is discussed.

3. Of the children examined, 21 per cent were found to have an adverse condition as defined in the study. Almost all these children had been previously examined as part of the regular school health program on entry to school. Four out of five of the previously examined children were already under medical care for the observed adverse condition.

4. Half the children not under care were already known to the school health service as having the adverse condition observed.

5. Analysis of the remaining 21 children, selected out of 997 previously examined children as having an adverse condition neither under care nor known to the school, revealed only one child with a serious condition which had developed since the previous examination and could not have been observed by a classroom teacher.

6. It is concluded that this school medical examination of first-grade children who had been previously examined in kindergarten was valueless from a case-finding standpoint.

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Public Health Significance of Tubercle Bacilli Resistant to Isoniazid

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The propensity of the tubercle bacillus to acquire drug resistance remains at least a potential threat to public health control measures. Hence, the laboratory research reported here may have as much of interest to the epidemiologist and others in the tuberculosis control field as to the laboratory workers to whom it was addressed.

Conflicting evidence has accumulated in the literature concerning the significance of isoniazid-resistant tubercle bacilli. Our concern with regard to these organisms was increased following the establishment by the New York City Department of Health of a policy of treating the unhospitalized patient with isoniazid.[1, 2] We had to determine the extent of the risk involved in the spreading of these resistant organisms by the unhospitalized patients to their contacts. We did not understand the role played by the isoniazid-resistant tubercle bacilli in the maintenance and spread of the active lesions in the individual patient. In other words, are tubercle bacilli resistant to isoniazid, virulent or avirulent?

The available evidence is contradictory. In vitro experiments, conducted in our laboratory, clearly demonstrated that pure cultures of resistant tubercle bacilli may regain their sensitivity, as well as their virulence for guinea pigs, if they are grown for several generations in a drug-free medium.[3]

The host employed in the various studies with regard to the virulence of isoniazid-resistant tubercle bacilli appears to influence the conclusions of the investigators. That resistant tubercle bacilli are virulent was the opinion of a number of individuals [4-7] when the mouse was employed as the laboratory animal. However, at least one report [8] indicated that isoniazid-resistant tubercle bacilli did not cause progressive disease in mice.

There seems to be a definite loss of virulence of the isoniazid-resistant tubercle bacilli if the guinea pig is the host.[7, 9-11] However, it is worthy of note that the resistant organisms do multiply in the guinea pig, though no progressive disease is usually produced, and that these organisms are probably eventually eliminated. In a previous paper [11] we noted that guinea pigs inoculated with the INH-resistant organisms became tuberculin-positive within four to 16 weeks and that local abscesses were noted in at least some of the guinea pigs. These local abscesses contained tubercle bacilli which retained the same degree (100 μg/ml.) of resistance to isoniazid as was present in

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the original inoculum. However, with the exception of guinea pigs which developed an enteritis and died, no progressive tuberculosis developed. Moreover, the tuberculin-positive guinea pigs eventually (in about 30 weeks) reverted to tuberculin-negative. What is worthy of note was the fact that the resistant organisms in the guinea pigs which developed a concomitant disease (enteritis) multiplied and produced tuberculous lesions in the lungs, spleen, and liver. Subcultures from these tuberculous lesions produced cultures of tubercle bacilli resistant to 100 μg of INH/ml. of media which was equivalent to the degree of resistance present in the original inoculum. We must therefore not ignore the thought that though resistant tubercle bacilli have seemingly lost their virulence for guinea pigs, that these organisms will multiply and produce tuberculous lesions under the proper conditions, such as concomitant enteritis.

It was previously determined that [1,2] if resistance to isoniazid develops in a patient, these resistant organisms will continue to multiply and the bacteriologic picture will worsen. In general, it was noted [1] that some correlation existed between the development of resistant organisms in patients and non-improvement by both x-ray and bacteriologic standards when the patient was continued under isoniazid therapy.

The New York City Department of Health is interested in determining the extent of the spreading of these isoniazid-resistant organisms in the community by the unhospitalized patient undergoing isoniazid therapy. This will be the subject of a future report. In view of the laboratory observation that the resistant tubercle bacilli will produce lesions in guinea pigs with a concomitant disease, and because the sputa of patients with resistant organisms will usually also contain varying proportions of sensitive tubercle bacilli, we attempted to determine the role of the resistant organism: (1) when mixed with virulent tubercle bacilli and inoculated into normal animals, and (2) when injected into guinea pigs which previously had been inoculated with virulent tubercle bacilli.

It was hoped that we would thus obtain information which might be of use in interpreting our findings with regard to the possible spreading of resistant organisms by the unhospitalized patient.

Method

Experiment A—A single strain, No. 859, of tubercle bacilli virulent for mice and guinea pigs and sensitive to 0.1 μg INH/ml. of media, was grown on INH-containing Proskauer-Beck medium until the organisms became resistant to 100 μg INH/ml. The 100 μg/ml.-resistant organisms were then transplanted three times on media containing 100 μg/ml. The third transplant became the source of the resistant organisms used in the experiment requiring mixtures of resistant and sensitive organisms. The sensitive organism was the original strain, No. 859, which was isolated from a patient in our clinic.

The inoculum was prepared by suspending the growth of either the resistant or sensitive organisms in a phosphate buffer, shaking the suspensions with glass beads for one hour, and then adjusting the turbidity to equal the No. 1 tube of the MacFarland nephelometer (3×10^8 organisms). Mixtures of the resistant and sensitive suspension were then prepared in proportions as indicated in the protocol (Table 1).

Mice were inoculated intravenously with 0.1 ml. of the inoculum; guinea pigs with 0.25 ml. into the inguinal area.

Experiment B—Suspensions of 10 virulent and sensitive strains of tubercle bacilli isolated from 10 different clinic patients were each diluted to equal the No. 1 tube of the MacFarland nephelo-

Table 1—Guinea Pigs and Mice Injected with Mixtures of Varying Proportions of INH-Sensitive and INH-Resistant (100 ug/ml.) Tubercle Bacilli. Lesions Produced Were Cultured and the Isolated Tubercle Bacilli Tested for Sensitivity to Isoniazid

Inoculum Mixture	Guinea Pigs *			Mice		Sensitivity to μg/ml. Isoniazid of Tubercle Bacilli Isolated from Lesions													
						Guinea Pig † μg/ml.							Mouse † μg/ml.						
	No. of animals	Tuberculin test following injection	Death in weeks with tuberculous lesions	No. of animals	Death in days with tuberculous lesions	Control	0.1	1.0	5.0	10.0	25.0	50.0	100.0	Control	0.1	1.0	5.0	25.0	50.0	100.0
100% sensitive	5	Positive	10, 13, 16 (2 died of enteritis)	10	16, 20, 21, 22, 26 26, 42, 46, 49, 56	4+	0	0	0	0	0	0	0	4+	0	0	0	0	0	0
100% resistant	5	Positive	None after 5 months	10	None after 5 months	..								..						
50% resistant + 50% sensitive	5	Positive	5, 6, 7, 11, 16	10	24, 24, 24, 24, 26, 28, 38, 42 (2 alive after 5 months)	4+	0	0	0	0	0	0	0	4+	1+	1+	1+	1+	1+	1+
90% resistant + 10% sensitive	5	Positive	5, 7, 7, 13, 14	10	29, 29, 29, 29, 36, 79, 108 (3 survived after 5 months)	4+ col	20	0	0	0	0	0	0	4+	2+	2+	2+	2+	2+	2+
90% resistant + 2% sensitive	5	Positive	13, 13, 16 (sacrificed 17, 17—lesions in liver, spleen, and inguinal nodes)	10	36, 115 (8 alive after 5 months)	4+	0	0	0	0	0	0	0	4+	1+	1+	1+	1+	1+	1+

* Guinea pigs were tuberculin-negative before injections.
† Control tube does not contain any INH. Culture growth reported as 4+, 3+, 2+, 1+, <1, 0.

meter. The virulent and sensitive organisms were injected into different guinea pigs (0.25 ml. subinguinal).

Twenty-five days later (seven days after becoming tuberculin-positive) the guinea pigs were reinjected with various strains of tubercle bacilli, each resistant to 100 μg INH/ml. media. Normal guinea pigs were inoculated at the same time with the same resistant organisms.

In both Experiments A and B, after autopsying the animals, the lesions were cultured, and the tubercle bacilli isolated were tested for sensitivity to isoniazid.

Results

Experiment A

The purpose of this experiment was to determine if resistant organisms would produce tuberculous lesions in guinea pigs and mice if the inoculum also contained sensitive organisms. The salient points indicated in Table 1 were that:

1. All guinea pigs became tuberculin-positive.

2. All tuberculous lesions of guinea pigs consisted of only INH-sensitive

tubercle bacilli. No resistant organisms were in any of the lesions, even when the original inoculum was a mixture of 98 per cent INH-resistant and only 2 per cent INH-sensitive tubercle bacilli.

3. In mice, some resistant organisms took part in the formation of the tuberculous lesions, though the sensitive organisms were by far more predominant, even when the inoculum consisted of 98 per cent resistant and 2 per cent sensitive tubercle bacilli.

Experiment B

In this experiment the guinea pigs were first injected with 10 different sensitive strains of tubercle bacilli and one week after the animals became tuberculin-positive (25 days after original injection) were reinjected with 10 resistant strains. By this means we attempted to determine if the resistant organisms would establish themselves in the animal which had previously been exposed to the sensitive bacilli.

No resistant organisms were isolated from tuberculous lesions of the autopsied guinea pigs. All normal guinea pigs became tuberculin-positive following the injection by the resistant organisms.

Discussion

Our primary concern with regard to the isoniazid-resistant tubercle bacilli is the determination of their importance in the epidemiology of the disease, as well as their relationship to the active lesion in a patient.

The results of the experiments described in this report accentuate the doubt concerning the virulence of the isoniazid-resistant organisms. When comparatively few (2 per cent) of the inoculum were the isoniazid-sensitive organisms, and 98 per cent consisted of the resistant organism, the latter played a minor, if any, part in the formation of the tubercular lesions. All the organisms in guinea pig lesions and the bulk of the organisms in the mouse lesions were isoniazid-sensitive. Resistant organisms could not be found in the tissues even when the guinea pigs were first given isoniazid-sensitive organisms and were injected with the resistant strains after the animals were converted to tuberculin-positive.

Although the results point toward a loss of virulence for guinea pigs and to a lesser degree for mice, we cannot, as yet, draw definite conclusions with regard to the human host. It must be remembered that the resistant organisms did produce lesions in guinea pigs suffering from a concomitant disease (enteritis); that these organisms do revert to isoniazid-sensitive in vitro if grown in drug-free media; and that patients as a rule worsen bacteriologically once these organisms appear.

It is possible, of course, that these resistant organisms play no part in the maintenance and spread of tubercular lesions in a patient. If that is true then the bacteriologic relationship to non-improving patients should be a consistant increase or, at least maintenance of the isoniazid-sensitive organisms, even when isoniazid-resistant organisms are being produced. In other words, the sensitive organisms (or perhaps partially resistant ones) are producing the lesions and these organisms are not eliminated by the drug. They multiply as sensitive organisms and maintain the active disease, and at the same time resistant organisms are produced which play no part in the formation of new lesions.

To prove this would require a correlation between clinical findings and a quantitative study of resistant and sensitive tubercule bacilli in sputum of patients. We are at present undertaking this experiment by means of the quantitative catalase test,[13] which has proved of value in rapidly identifying the percentage of resistant and sensitive tubercle bacilli in a culture.[14] We hope by

this means to study and report the relationship between the clinical findings on the one hand and the resistant-sensitive correlation on the other.

Summary and Conclusion

1. Guinea pigs and mice were injected with mixtures of isoniazid-resistant and isoniazid-sensitive tubercle bacilli. The inoculum consisted of 100 per cent sensitive organisms; 50 per cent sensitive and 50 per cent resistant; 90 per cent resistant and 10 per cent sensitive; 98 per cent resistant and 2 per cent sensitive. After autopsy of the animals, the lesions were cultured and the tubercle bacilli tested for isoniazid sensitivity.

2. Guinea pigs were injected with sensitive strains of tubercle bacilli; 25 days later (seven days after reverting to tuberculin-positive) they were reinjected with isoniazid-resistant tubercle bacilli. After autopsy the tubercle bacilli isolated were tested for sensitivity to isoniazid.

3. The results indicate that the resistant tubercle bacilli play little, if any part, in the formation of tubercles in the guinea pigs or mice under the conditions of the experiments described.

4. The possible significance of the isoniazid-resistant organisms is discussed.

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VA Clinical Psychologist Examinations

The U. S. Civil Service Commission announces an examination to fill clinical psychologist positions, including a few speech pathologist positions, in Veterans Administration hospitals and offices throughout the country. Annual salaries range from $5,940 to $10,800.

No written test is required. Applicants will be rated on the basis of evaluation of their personal and professional qualifications.

Applications, being accepted until further notice, must be filed with the Board of Civil Service Examiners, Veterans Administration, Washington 25, D. C. Further information and application forms may be obtained from post offices or from the U. S. Civil Service Commission, Washington 25, D. C.

Proposed Report on Educational Qualifications of Sanitary Engineers Engaged in the Field of Public Health

This is a provisional report published at the request of the Committee on Professional Education of the American Public Health Association before transmittal to the Governing Council in order to permit the members and Fellows of the Association to review it and to offer criticism and suggestions. All comments will be carefully weighed by the Committee on Professional Education and accepted changes will be incorporated in the report before presentation to the Governing Council for action. Address comments to: Secretary, Committee on Professional Education, American Public Health Association, 1790 Broadway, New York 19, N. Y.

The term "sanitary engineer" * as used in this report refers to the engineer who is trained in technics that permit him to advise upon, administer, supervise, or otherwise conduct professional and scientific work where the use of engineering knowledge and skills are essential for identification and control of environmental factors that may produce a detrimental effect on the physical, mental, or social well-being of man.

The term "sanitary engineering" as used in this report includes the public health aspects of all environmental conditions and situations, the control of which is based upon engineering principles and the application of scientific knowledge.

I. General Scope of Engineers in Public Health Programs

Engineers with basic training in civil engineering have long been identified with the design of water treatment plants, sewerage systems, and facilities for waste disposal. It became evident, however, that to meet adequately the problems of both design and operation of such installations a knowledge of chemistry and the biological sciences was essential. This broadened the civil engineer's sphere of interest and in the course of time he became stimulated to take an active part in all of the many and related problems concerned with the promotion and preservation of the public health. The expansion and complexities of environmental controls have necessitated the enlistment of persons in other branches of engineering who possessed detailed knowledge of mechanical, chemical, and industrial engineering. Thus, the skills of several types

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This report, like all other statements of the committee on professional and technical qualifications in public health, is subject to periodic revision in order that it may be kept abreast of the best thought.

This proposed report is a revision of the report on the Educational Qualifications of Public Health Engineers approved by the Governing Council on March 1, 1947.

* The term "sanitary engineer" is used in lieu of the term "public health engineer," but is intended to include all those who now have the latter title.

of engineers have been coordinated to provide solutions for the problems that have been created by technological developments.

The practice of sanitary engineering includes not only the activities of engineers in official health agencies, but also the functions of engineers in private practice, in industry, in the field of international health, and in governmental organizations other than those regarded as health agencies. These functions involve the design of sanitary works, the review of plans, the supervision of plant operation, and the administrative direction of persons involved in these activities. In order to be qualified to review plans and to administer technical operations the sanitary engineer must be trained and experienced in basic principles of planning, designing, construction, and operation of such works and to advise on many related sanitation problems.

Public health activities may be divided into two distinct but closely interrelated fields, one having to do with personal health services directed toward the individual and the other with environmental health services directed toward the control of the environment. The first is normally the field of the physician and the nurse, while the second is that of the engineer and other sanitation personnel. There is no clear line of demarcation between these two fields of endeavor and consequently we have a zone wherein the activities of the physician and engineer merge. Therefore, successful operation of a public health program demands careful planning, cooperative effort, and administrative participation by both physician and engineer.

A complete public health program must include adequate provision for both personal and environmental health services. The health officer aided by an adequate and competent engineering staff will have the necessary administrative assistance and technical advice to develop a complete and well rounded program. Not only must the sanitary engineer assume responsibility for the engineering aspects of public health phases of community life, but he must also participate in the planning, design, construction, and operation of sanitary facilities that fall within the purview of other branches of government.

It would appear self-evident that a department of health, through its engineering division or bureau, does not operate as an isolated unit but that it plays a major role in the maintenance of an orderly and properly functioning society by cooperation with many other departments of government having engineering functions. A broad concept of the social, political, and economic forces that operate in the community is essential to the recognition and development of such a program.

A considerable expansion of public health programs is taking place at state and local levels. Industry is also expanding health protection and the sanitary engineer is finding opportunities for application of his knowledge and technical skill in that field. Consequently, the demand for sanitary engineers exceeds the available supply of qualified men.

Expansion of public works construction, housing and urban redevelopment, protection against ionizing radiations, industrial activity, and the conservation of water resources are claiming additional numbers of trained men. Only by the establishment of high professional standards with a corresponding increase in remuneration can the required number of competent persons be obtained and their services retained.

II. Activities and Functions of Engineers in Public Health

Major activities of the sanitary engineer are centered in the conception, de-

sign, construction, operation, and management of sanitation facilities to safeguard the public health. The procedures involved and the role of the sanitary engineer in the development of such facilities include:

a. Investigation, planning, and promotion
b. Designing structures and preparing specifications
c. Inspection and direction of construction
d. Management, maintenance, and operation
e. Administration

The design and construction of sanitation facilities is generally undertaken by engineers in private or consulting practice, although large corporations, water departments, sewerage divisions of large cities, and city engineers may be engaged in this work. Some units of the federal government as well as state public works departments will do design work for properties under their jurisdiction. The management, maintenance, and operation of these works is generally assigned to existing or specially organized departments or to an appropriate political subdivision.

The proper development and operation of sanitary works are matters of public concern in general and of public health in particular. Since economic considerations are associated with the development and operation of sanitary works, and since there may be a conflict of interest among different regions, communities, or industries with regard to sanitary needs, the supervision and regulation of such works is placed under governmental auspices, notably the engineering subdivision of health departments. Briefly, those organizations are entrusted with the following activities:

f. Conception of projects or practices to correct deficiencies and promotion of action to insure execution of remedial measures
g. Furnishing advice relative to the approval of proposed works and approval of completed works
h. Supervision of operation and maintenance of existing works
i. Development and enforcement of rules and regulations
j. Administration of programs and procedures of the agency office

Procedures (f) to (j) are complementary to the fundamental engineering procedures associated with the development and operation of sanitary works as listed in (a) to (e); they may be regarded as providing a system of checks and balances in the interest of health and welfare. To fulfill competently procedures (f) to (j) the responsible engineer must possess the fundamental qualifications required by procedures (a) to (e), as well as additional qualifications related to the public health and welfare aspects of these activities.

Sanitary engineering in public health work includes not only supervision of the development and operation of sanitary works as outlined above, but also technical and administrative participation in the planning, design, construction, operation, and maintenance of other elements of community life related to the protection and promotion of public health. These elements include: dwellings and buildings; structures and equipment used to produce, process, and distribute the food supply, refuse collection and disposal; industrial operations, including waste disposal and excessive exposure of personnel to radiation; control of environmental conditions to minimize disease-carrying insects and rodents and to the growth of noxious weeds; atmospheric pollution including pollen, dusts, fumes, vapors, gases, and mists; and noise abatement.

The following are listed as sanitary engineering activities now carried on in the public health field:

1. Water supply, treatment and distribution
2. Sewerage systems, sewage and industrial waste treatment and control
3. Water pollution control
4. Municipal and rural refuse disposal

5. Control of rodents and insects and noxious weeds
6. Food sanitation involving the production, pasteurization, and processing of fluid milk and other manufactured dairy products; control of processing, storage, handling, and distribution of meat and meat products, poultry, bakery goods, fish, shellfish, canned and frozen foods; and the sanitation of public eating and drinking establishments
7. Sanitation of schools, places of public assembly, camps and summer resorts, swimming pools, other bathing places and recreational areas
8. Promotion of healthful housing
9. Home accident prevention
10. Control of atmospheric pollution including fumes, dusts, gases, odors, and pollen
11. Industrial hygiene and sanitation, involving special engineering problems relating to industrial and manufacturing processes, and including varied elements of environmental sanitation
12. City planning and redevelopment involving housing standards, heating, lighting, ventilation, and plumbing
13. Noise abatement.

In any program to influence and benefit the public health—both from the investigational viewpoint and development of feasible solutions—the 13 areas of activity listed above necessitate the utilization of many phases of engineering knowledge.

III. Educational Background of Sanitary Engineers

Sanitary engineers must possess two distinct and essential educational qualifications: (1) basic education and training in engineering, and (2) specialized knowledge and skill in sanitary science, sanitary engineering, and public health.

A review of the problems usually allocated to the engineering member of the health department staff would also reveal the importance of personal qualities, without which the most perfectly trained sanitary engineer would prove to be an ineffective public health worker. To attain success in full measure engineers in public health work should not only be competent in their field of practice, but must also be able to establish and maintain favorable human relations in their own department, other departments of government, professional groups, and with the public. Among the personality attributes to be developed are those that reflect creative ability, leadership, sound judgment, intellectual honesty, and a high sense of moral values. While many of these personality qualifications may be recognized as necessary for success in any field, the public character of health work makes these attributes of such importance that they require consideration on almost the same basis as professional and technical qualifications. While some of these attributes are inherent of personality and character traits others emerge only after a few years of professional experience. Time is required, therefore, to develop, or disclose the lack of, an individual's ability to undertake responsibilities as an effective sanitary engineering staff member of a health department.

A. Basic Engineering Education

The sanitary engineer in public health work should be a graduate of a full four years or longer course leading to a bachelor's or higher degree * taken at a college or university of recognized

* In making this recommendation the American Public Health Association expressly recognizes that there are persons now actively engaged in public health work who are lacking in formal education, but whose training or experience should be accepted as fully equivalent to the basic engineering education defined above. The basis of substitution shall be at least two years of appropriate training or experience equivalent to one year of formal engineering education. Such persons who have sufficient equivalent training or experience to substitute for the accredited engineering education they lack shall be considered professional engineers for the purpose of this report. This substitution, however, shall be limited to baccalaureate engineering education requirements.

standing.* In so far as the academic requirements are concerned the basic education of engineers should make him eligible for admission to examination for licensure to practice professional engineering in the state where he is employed. Completion of a well organized sanitary engineering curriculum in seeking a bachelor's degree will prove to be advantageous to the graduate.

B. Specialized Education and Training

The varied functions of a sanitary engineer in public health work necessitate additional education beyond that ordinarily acquired by basic training in engineering. Successful performance in his profession requires: (a) an intimate and working knowledge of the physical, chemical, biological, and engineering sciences upon which the sanitary control of environment is based; and (b) the ability to identify, evaluate, and explain in terms of their public health implications those environmental factors that will promote and protect health, or those that are capable of injuring health.

This specialized knowledge lies mainly in three fields: (1) sanitary engineering, (2) sanitary science, and (3) public health. The elements of these are indicated in the outline of graduate education, Section IV. In the rigorous undergraduate engineering curriculum the amount of time that can be allotted to specialized study in these three fields without impairing the basic engineering education is limited.

For best results, the minimal preparation of an engineer for a career in public health requires one or more years of specialized study as outlined in Section IV and a period of supervised experience in addition to the minimum of four years required for graduation in engineering. However, to enable the graduate in engineering to begin work and gain experience and to prepare him for graduate study it is desirable that his undergraduate program should include as much instruction as possible in the fundamental sanitary sciences—especially bacteriology and chemistry—and in the principles of sanitary engineering and public health.

A program of study, preparing for a career in sanitary engineering, may follow one of three approaches:

1. Four-year Undergraduate Curricula in Sanitary Engineering †—In 1952, only four such curricula were accredited by the Engineers' Council for Professional Development.

2. Sanitary Options in Four-Year Undergraduate Curricula of Civil Engineering—In 1952, 26 ‡ such curricula were accredited by the Engineers' Council for Professional Development.

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* A college or university of recognized standing is defined as one which is accredited by a national or regional accrediting association, such as the Association of American Universities, the National Commission on Accrediting, or the New England, Middle States, North Central, Southern, or Northwest Association of Secondary or Higher Schools, or one whose engineering curricula have been accredited by the Engineers' Council for Professional Development.

† According to a publication of the U. S. Public Health Service entitled "Graduates from Undergraduate Sanitary Engineering Courses in the United States in 1953," there were 41 universities and colleges offering sanitary engineering as a major area of study concentration. From these institutions, during the academic year 1953, 216 persons were reported as having been graduated after having successfully completed work in sanitary engineering. Of this number, 29.6 per cent followed curricula which, among other subjects, contained 33 to 45 semester hours of the following: water supply and sewerage design; water treatment and distribution; sewage treatment and disposal; sanitary engineering laboratory methods; chemistry; microbiology of water and sewage; chemistry, including general chemistry; biological science, including bacteriology; related sanitary science and sanitation; and geology and hydrology.

‡ One of these was called Public Health Option.

3. Graduate Curricula in Sanitary Engineering and Public Health—These include two general types of programs, those in which the major study and graduate degree is in sanitary engineering and those in which the major study and degree is in public health. Such programs provide opportunities for engineers with little or no training in the public health aspects of engineering to develop a sufficient background to begin work in public health. They also provide graduate instruction for those who have completed undergraduate programs in sanitary engineering or sanitary options. Either of the two types of programs should be accepted as satisfactory for these purposes if they include adequate instruction in each of the three essential fields of knowledge previously outlined as well as enough choice of electives to meet the needs of students with varying backgrounds of training and experience. As yet, there are no accrediting agencies that examine and accredit graduate curricula in sanitary or public health engineering.

As a minimum for initial employment as a sanitary engineer, the graduate engineer should have completed an approved undergraduate sanitary option or sanitary engineering program; or, in addition to graduation in engineering, should have received an equivalent amount and similar character of approved postgraduate education or inservice training in sanitation and public health equivalent in amount and similar in character to that offered by the previously mentioned courses.

Such postgraduate training can best be obtained through study in an approved educational institution but may be provided by postgraduate self-education or inservice training during a period of probationary employment under competent sanitary engineering supervision. A young engineer, at first employed in a subordinate position, should work under close supervision until he has prepared himself by experience or graduate study for positions of major responsibility. Graduate education affords the greatest assurance that the sanitary engineer will become both broadly proficient and well grounded in the subjects that are fundamental to his progress.

IV. Graduate Education

The true value of the sanitary engineer rests squarely on his ability within his professional field.

Because of the wide difference in the technical knowledge required in the various fields of sanitary engineering activity, opportunity should be afforded for some specialization. Depending upon the student's preparation, a suitable program of graduate study should be developed from the following elements of engineering technology, sanitary science, and public health practice:

1. The principles and practices of engineering analysis, design, and operation as applied to works and projects for the protection and promotion of the public health, including (but not limited to) the following: water supply, purification and distribution; sewerage and sewage treatment, both municipal and suburban; the collection, handling, and disposal of municipal, suburban and rural refuse; salvaging and treating industrial wastes; water pollution control; projects for the control of insect, rodent, and other vectors of disease transmission; the engineering and administrative phases of food and milk sanitation; the sanitation of buildings including ventilation, air conditioning, heating, plumbing, and illumination; housing; municipal real estate planning, development and redevelopment; and industrial sanitation with particular reference to those industrial health hazards the correction of which is largely an engineering problem.

2. Sanitary sciences, including (but

not limited to): bacteriology, chemistry, parasitology, planktology, entomology, and human physiology as related to problems of sanitary engineering interest.

3. (a) The principles of public health including (but not limited to) the following: public health administration sufficient to give the student a clear understanding of the purposes, functions, and legal bases of the general public health program and the responsibilities of the engineer within that program; epidemiology and communicable disease control; and statistical methods.

(b) Emphasis should be placed upon the fundamental scientific engineering and public health content of the subject matter presented—the student being supervised and guided in his development of technics and practices based upon fundamental concepts.

(c) For those engineers who desire graduate training, including some technical engineering and some public health instruction, a university that includes both a faculty of engineering and a faculty of public health is to be desired. For those who desire only technical engineering work, a good graduate school of engineering is the most important consideration.

V. Classification of Sanitary Engineers

In any organization having a staff of engineers classification is necessary. In general, such classification automatically occurs and it is a general requirement under usual civil service procedures. However, lack of uniformity in classification exists among the various health agencies employing engineers. The following classification with educational and experience requirements is suggested. It is based on the requirements of several states, Federal Civil Service, the U. S. Public Health Service for Commissioned Officers, and the classification of engineers as adopted by the American Society of Civil Engineers.

The education, training, and experience stated in the classification should be regarded as the minimum that is normally acceptable. It is not intended that the qualifications should be retroactive, but rather that they should apply to the selection of new employees and serve as a guide in the future advancement of sanitary engineering personnel.

Because of the present limited supply of qualified engineers for public health work, it is proposed that in any grade two years under competent supervision in sanitary engineering work in a health agency may be substituted for the one year of graduate study as set forth in this report. However, the advantages of specialized graduate study in the sound and early development of sanitary engineers for positions of responsibility are recognized. Therefore, as soon as practicable, at least one academic year of approved graduate study as described in Section IV should be made a basic requirement for appointment or promotion to Grade III or to higher grades in this classification.

Education and Experience

The minimum educational requirements for all grades are: (1) graduation in engineering from a college or university of recognized standing; and (2) satisfaction of academic requirements for admission to examination for licensure to practice engineering in the particular state.

With the exception of Grades I and II, specialized education should include, in addition to the minimum educational requirements, at least one academic year of graduate study in a recognized institution of learning leading to a graduate degree with major study in sanitary engineering, sanitary science, and public health. In lieu of a year of graduate study, two years of suitable practice under the supervision of a competent

sanitary engineer in public health work may be substituted provided that: (1) such substitutions of experience for graduate study normally should not be allowed for grades higher than Grade III; and (2) a sanitary engineer who later completes a year or more of graduate study should receive equivalent credit in his classification for the years of experience previously substituted in lieu of graduate study.

Attainment of the doctor's degree in sanitary engineering or in public health —if based on special studies in the field of sanitary engineering in a school of recognized standing—should be considered as the equivalent of, and may be substituted for, a part of the experience requirements of the classification below as follows: Grade III and above—two years.

Experience

The qualificationss for each grade should conform with the educational requirements or equivalent experience as described above in addition to the experience indicated below:

Grade I--Trainee, no experience required

Grade II—At least one year of suitable experience in sanitary engineering work under competent supervision

Grade III—At least two years of suitable experience in sanitary engineering in a grade comparable to Grade II, of which at least one year of the total experience must be in public health work. (Total three years of sanitary engineering, one of them in public health)

Grade IV—At least two years of sanitary engineering experience in a grade comparable to Grade III, of which at least two years of the total experience must be in a responsible position in public health work. (Total five years of sanitary engineering, three of them in public health)

Grade V—A minimum of five years of engineering experience in a grade comparable to Grade IV. Of a total of 10 years sanitary engineering experience required, five years of the total experience must be in a responsible position in public health. (Total 10 years of sanitary engineering, six of them in public health)

Grade VI—A minimum of two years of engineering experience in a grade comparable to Grade V. Of the total experience required, five years of the total experience must be in a responsible position in public health. (Total 12 years of sanitary engineering, six of them in public health)

VI. Qualifications for Directing Personnel

Director

The qualifications for the position of director of a division of sanitation, or the equivalent (however designated), in a health department will vary depending upon the size of the division and the responsibilities of the position. A director should have the educational requirements set forth for all sanitary engineers, coupled with general knowledge of all phases of engineering in public health work and an intimate knowledge of those problems that are of importance in the particular area or community in which he is to be employed. It is particularly important that he should have those qualities of personality and character that denote a leader, and he must have the administrative talents to organize and direct operations at a division level.

In small health units where only one person is engaged in environmental sanitation activities, this person should meet the qualifications of one of the sanitary engineering grades unless he is working under the technical direction of a sanitary engineer of the staff of an overlying governmental health agency.

Assistant Director

An assistant director should have the qualifications for the next grade below that in which the director is classified and should show evidence of leadership qualities as well as the desire and ability to assume administrative tasks.

COMMITTEE ON PROFESSIONAL EDUCATION

(as of October 1, 1954)

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The Committee on Professional Education expresses grateful appreciation to the subcommittee which assisted with the preparation of this report. This subcommittee consists of:

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Board of Dental Public Health

The American Board of Dental Public Health announces its next certifying examination on October 13 and 14, 1955, in San Francisco, Calif., in conjunction with the annual meeting of the American Dental Association. Candidates for this examination must submit their applications to the secretary of the board not later than June 15, 1955.

As a result of the certifying examination given by the board at the University of Miami, in November, 1954, Drs. Polly Ayers, Leonard F. Menczer, and Jacob M. Wisan have been certified as Diplomates of the board.

Information and examination application forms may be obtained from the Secretary, Dr. Philip E. Blackerby, Jr., 250 Champion Street, Battle Creek, Mich.

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The Headaches of Suburbanization

One of the participants in the Symposia held at the Buffalo meeting on metropolitan-urban problems made the cogent comment that "it is probable that metropolitan urban problems are favored with more discussion and less action than any other phase of our system of local government."

The same comment was volunteered by the editorial writer in the Newark Evening News of October 16, 1954, when he spoke of the Buffalo meeting in the following terms. "If this (suburbanization) had been an increasing threat over 20 years, it is fair to wonder why greater and earlier stress was not placed upon it." The implied criticisms are undoubtedly warranted, since we have been long on diagnosis and short on therapy in this interesting and baffling problem of government. What do the discussions disclose and what are the areas of agreement? No dissenting opinion arose on the fact that the problem of suburbanization was due to the "great spill" over the boundary lines of municipalities beginning in the 1920's and was sharply accelerated after the war. Its causes seemed reasonably clear: increased population rate of growth, improved transport facilities, decentralization of important industries, housing developments, and escape from overcrowding. At least in general terms, these causes were agreed upon, with particular emphasis on the fact that great generalizations were not uniformly applicable to all the areas of the country.

It was equally agreed, with startling unanimity, that society was completely unprepared to meet the many governmental issues which resulted from this great mass movement and extension of new population in suburban areas. All of the social functions and facilities with which an American population is familiar were very much in demand and were difficult to supply because of the absence of appropriate social organization and the collateral fiscal and political instruments. The shift from a rural to an urban economy found most parts of the United States completely unprepared to provide adequate services.

The inevitable results in 1954 of chaotic administration and of failure of most services characterized much of the discussion. Ample statistical data were provided to substantiate the feeling that the conditions described, with their subsequent continuing hazards to the public, were not being relieved by realistic and prompt solutions.

It is not unfair to say that it was equally apparent that the responsibility for these failures might be universally shared among health departments, school departments, legislative groups, and the average citizen. Beating of breasts was more general than the creation of leadership. Militant inertia, when confronted with fiscal and legal obstacles to programing, settled down to sitting by until something turns up. Unfortunately in too many instances both state and local agencies contributed to the aggravation of the problem, either by initiating short-term, ill-advised solutions or by focusing on long-range efforts which were unrealistic or retarding in their effect. Somewhere along the line, the leadership by some health departments and similar official agencies in planning social organization to meet many of the sanitary and health problems was singularly lacking. Perhaps they were diverted from this important task by the great responsibilities which had been placed upon them over the last 20 years in the new fields of medical care and hospitalization. Many of the more familiar and orthodox efforts appeared to go by the board when government units created confusion or were nonexistent.

With respect to therapy, the discussions were singularly barren. Yet, it is in this area where the health departments may still have their best opportunity. They must develop organizational and fiscal solutions to the problems which were so well presented. These organizational solutions are many in number and in character and enough examples of them are operative throughout this country to offer at least partial answers to the problems of suburbanization. None of them, of course, will spring full grown from a suggestion, but will require major continuing effort and leadership on the part of state and local health officials.

The metropolitan areas of this country will continue to provide substantial headaches in administration and in finance until and unless comprehensive or ad hoc provisions are made for their correction. Which of the available procedures is best adapted to a particular area will be a matter of local determination. Health officials, however, should look with discerning interest at the Virginia State law providing for annexation. It is perhaps one of the best in the country. They would find equal profit in reinspection of the many successful sanitary districts throughout this country, such as in Nassau County, N. Y., the Washington Suburban Sanitary District in Maryland, the Los Angeles County Sanitary District, and others.

In similar fashion, many devices for joint operation of city and county functions have been worked out in a number of areas in this country. The Greater Toronto Experiment in combining responsibility for the operation of many city-metropolitan area activities will bear watching.

In all of these efforts the American Public Health Association itself might and could play a significant part in developing answers through committee action as a major contribution to public health administration. Such an effort would fall within the scope of the Committee on Administrative Practice, even though this might require a strengthening of interest and effort in this particular sector. Is it too much to hope that, when another symposium on suburbanization is held, concrete proposals will be presented for organizational structures which have had the successful test of time and which promise equal success for the next decades? The perfect answer is unlikely to appear, but better improvisation for partial solutions can certainly be discovered and applied out of the available experience of the last two decades.

Albert Neisser and the Gonococcus

Late in the eighteenth century, John Hunter, a brilliant English surgeon, "proved" that gonorrhea and syphilis were variations of the same disease. He inoculated his own skin with infectious material from the urethra of a young man presumed to have gonorrhea, and thus he contracted syphilis from which he later died. This heroic experiment added nearly a century to the confusion over the identities of the two diseases. Although Philippe Ricord in 1831 helped to clarify the issue by the inoculation of several hundred human volunteers with gonorrhea without producing syphilis, it remained for Albert Neisser to discover the gonococcus in 1879 and thus, also, to give his name to that group of organisms now known as the Neisseria, of which the gonococcus is the type species. All further question as to the separate identities of the two diseases was settled, of course, by the discovery of Treponema pallidum by Schaudinn and Hoffman in 1905.

The one hundredth anniversary of the birth in Breslau of Albert Ludwig Sigmund Neisser will be observed with proper ceremony this year. It is appropriate, therefore, to look back through the years to discover what has happened to the disease, the etiology of which was first disclosed by this German physician.

Subsequent to its discovery, the gonococcus was first cultivated by Leistikow and Loeffler in 1882, but more satisfactorily grown and studied by Bumm in 1885. Its identification was greatly simplified by the introduction of the Gram stain, the only significant contribution to science by Hans Christian Joachim Gram in 1884. Its differentiation from others of the Neisseria was subsequently made possible by the application of sugar fermentation, and in 1911 Schwartz and McNeil applied the principle of complement fixation to the diagnosis of gonorrhea.

Except for certain relatively recent refinements in the culture of the gonococcus, the diagnosis of gonorrhea has improved hardly at all beyond the contributions of these men. Most gonococcal infections in men are diagnosed at the microscope from smears stained by the method of Gram (if not with methylene blue), and culture of the gonococcus remains the most dependable, but still a very inadequate means for the detection of the disease in women and female children. Cultural procedures, moreover, are still so uncertain that they give reliable results only in the hands of the experienced and are available only where direct laboratory service is to be had, since transportation media are not too reliable and are supplied by few laboratories.

The treatment of gonorrhea was advanced a little from the era of sandalwood oil by the introduction of potassium permanganate solutions for urethral irrigations by Janet in 1892, and a little further, early in the present century, by the addition of the silver salts to the therapeutic armamentarium. Filtrates, vaccines, bacteriophage, nonspecific proteins, and fever each had their short day, as did the hormones for the treatment of gonococcal vulvovaginitis in female children. But urethral irrigations and instillations, prostatic massage, and vaginal douches were the general order of the day for nearly forty years with certain important modifications of philosophy and technics by Pelouze in 1928. Prostatitis was the rule, epididymitis was commonplace, pelvic inflammatory disease was a routine extension of gonococcal infection in women, and all sorts of minor and some major complications were expected to occur during the course of the disease in either sex, usually in spite of treatment.

The treatment of gonorrhea was left very much to the "clap doctor" and the quack, and those urologists and gynecologists who did treat the disease were careful

to do so "under wraps." In 1930 a group of these specialists in Massachusetts decided that it was time to make the management of gonorrhea a proper function of respectable medicine. As the Neisserian Medical Society of Massachusetts, and through the medium of the New England Journal of Medicine, they made themselves heard literally all over the medical world. In 1934 the American Neisserian Medical Society (now the American Venereal Disease Association) was organized and took over and extended the program and served as adviser to the U. S. Public Health Service in its development of the campaign for the control of gonorrhea.

In 1937 Dees and Colston first disclosed that the sulfonamides would cure gonorrhea and interest rose to fever pitch, only to subside miserably as the gonococcus proceeded to develop overwhelming resistance to every new member of this group of drugs. Within the short span of five years the sulfonamides had come and had almost gone, so far as gonorrhea was concerned. Fortunately, at this critical moment, Mahoney, Van Slyke, and others demonstrated that penicillin would cure gonorrhea, and it was not long before nation-wide experimentation confirmed this welcome fact. For the past ten years penicillin has been used almost exclusively for the treatment of this disease, and there has been no indication whatever of any developing resistance on the part of the gonococcus to this drug. Cure can be effected in practically every case by the proper dose of the drug and usually with a single injection. It may reasonably be said, therefore, that this problem has been solved and that the management of gonorrhea has become almost exclusively a function of respectable and ethical medical practice.

It would be most satisfying to be able to conclude this editorial with the statement that the problem of controlling gonorrhea has likewise been solved, that this disease of the multitudes and the ages has all but disappeared, and that Albert Neisser may now rest in peace in the knowledge that what he began with the discovery of the gonococcus has now been finished. But that is not so. Nearly 250,000 cases of gonorrhea were reported in the United States last year, and there is some evidence that the rate is rising again, after a brief decline from its peak in 1947. It is probable that hundreds of thousands of infections are never medically identified or reported and that up to a million infections may occur annually in this country alone. Diagnosis is so difficult in the female that the ratio of reported male to female infections may be as high as seven to one. Reinfection is so common, after quick cure, that it has been observed in some areas that less than one-quarter of the patients account for at least half of the infections—and up to ten, or more, infections in the same person within a calendar year have been reported. This is in great contrast with the more than 90 per cent decline in reported early syphilis since the introduction of penicillin; a phenomenon in contradictions which confounds the experts.

It is possible, of course, that the same therapeutic and epidemiologic and social forces which have produced the decline in syphilis may, in time, effect a similar decline in gonorrhea. Gonorrhea is many times more prevalent than syphilis, so that the mass to be moved is very much greater. Inability to diagnose the disease easily in women allows many undetected infections to remain as a reservoir for the repeated reinfection of many males, whereas syphilis is detected at very nearly the same rate in both sexes. Repeated reinfection is commonplace in gonorrhea, but relatively rare in syphilis; and the much longer incubation period of syphilis makes it more likely that that disease may be aborted before it reaches clinical and infectious levels by an antibiotic given for some other concurrent infection. Only time can tell.

In the meantime, as we observe the one hundredth anniversary of Albert Neisser's birth, and the seventy-fifth year since his discovery of the gonococcus, we are obliged to confess that about all we have gained in all that time is some little improvement in our diagnostic ability, an almost perfect therapeutic agent, and the almost total prevention of serious complications of the disease in the male, but not in the adult female. We have produced very little, as yet, in the way of a solution of the problem of what to do about gonorrhea as a very prevalent communicable disease.

Certainly, this is not the time to reduce appropriations or in any other way to relax our efforts for the control of the venereal diseases.

Social Components in Health Department Programs

As the number of social workers continues to increase in health departments interest is growing in examining and understanding the complementary nature of public health and social work. A "Guide in Considering Social Factors of Health Department Programs," has been prepared by social workers in the California State Department of Public Health. It was developed at the request of the California Conference of Local Health Officers to re-emphasize for all professional public health personnel the relationship between psychosocial factors and public health practices. Social work functions, as such, are not the focus, but rather the social factors a health department should consider in the furtherance of its programs, whether or not it employs a social worker. (See page 125 for summary.)

The primary function of social workers in hospitals—that of casework with individuals—is not always suited to public health agencies with their breadth of program. The guide furnishes organized material stressing the necessity of integration of social work and public health with the utilization of social work knowledge and technics in preventive and administrative public health programs. Although its essential content is not new to public health, it maintains the idea of the importance of the individual, suggesting ways, in addition to casework service, to preserve this concept.

Since health departments vary, as do social problems and the resources available to meet them, the questions and statements in the guide were made broad and general. A framework is provided from which more searching questions and analyses could be developed. An underscoring of the classic relation of social components to public health programs and the avoidance of technical social work terminology combine to enable professional personnel, such as health officers, directors of public health nursing, and health educators to apply the guide in program planning. Although the content of the guide is familiar and well traveled ground to social workers, it can serve as the base from which the social service consultant can begin to work with those who wish this type of assistance.

The guide has demonstrated primary value as an administrative and supervisory tool in development of new programs, in revaluation of current services, and in staff education. Although it is intended for use by all members of the health department staff, its greatest productiveness probably results when a social worker participates in its utilization. The guide, as a means to an end, can sharpen the focus of public health programs by helping to make effective use of funds, permitting the best utilization of available personnel, and diminishing overlapping and duplication of service.

Greetings from the Director-General of the World Health Organization to the Eighty-second Annual Meeting of the American Public Health Association in Buffalo, N. Y., October 12, 1954

MARCOLINO G. CANDAU, M.D., M.P.H., F.A.P.H.A. (Hon. F.A.P.H.A.)

In the last few years, your annual meetings have provided the World Health Organization with a most valuable forum for bringing home to the thousands of members of the American Public Health Association the real significance of WHO's aims and work. The second general session of the 79th meeting in San Francisco was entirely devoted to the topic of "International Health" and heard profound and far-reaching analyses by Professor Winslow, Dr. Boudreau, and Dr. Chisholm of the philosophy and the fundamental principles on which WHO is built. During that same meeting—and another one held last year—my colleagues, Drs. Soper, Mani, and Shousha, told you about the particular aspects of our organization's work in the Americas, Southeast Asia, and the Eastern Mediterranean.

I am personally very happy about these precedents, since, in line with what seems to have become a real tradition, it is this time my privilege to be your guest tonight as the representative of WHO.

Only, I notice that I have been put in a special situation. You did not ask me to prepare a speech or a paper on any specific question relating to WHO. Since I have been a member of the APHA for 15 years, and since I had the honor of being elected last November an Honorary Fellow of the Association, this may be a punishment for having gone over completely to the other side; or again it may be preferential treatment granted to an old friend. I, of course, like to look at it in the latter way. Indeed, I feel that tonight I am here as one of you, rather than as a guest, and I remember with pleasure one of the last meetings of the APHA I attended in New York, during which you showed your trust in me by making me one of the vice-presidents of your Association.

Speaking more officially, I am grateful to you for giving me this opportunity of extending the greetings of WHO to the 82nd Annual Meeting of the APHA and of underlining once again the great importance WHO attaches to its relationship with your Association. As you know, the basic role of WHO is to act as a kind of international clearinghouse, through which experience and knowledge in various branches of medicine gained by any individual country can be put at the disposal of all other countries. Exchange of scientific information is indeed the essential tool which we use in improving the public health services of our various Member States, thus enabling national health administrations to raise the physical and mental standards of their citizens. In a world in which the patterns of public health are constantly changing, WHO will be able to discharge its great responsibilities of leadership and coordination in the field of international health only if it is assured of the wholehearted cooperation of public health workers everywhere. The studies resulting from your annual meetings are undoubtedly among the most important sources WHO can use in

its continuous search for the most efficient and at the same time the most economical methods by which modern health measures can be introduced to the great majority of countries. No less precious, of course, is the contribution American, public health workers have made, and, I am sure, will continue to make, in serving as WHO consultants, field workers in an ever-increasing number of countries, and members of our Expert Panels.

I certainly do not need to stress in this gathering the importance of your share in the efforts initiated by the World Health Organization to coordinate research work on an international level, and in training of fellows from all over the world.

Once again, I am most grateful to you for having asked me to be with you here tonight. The interest and activity of professional groups such as yours are among the most powerful stimuli for those who are working in WHO, and I am convinced that our relationship with the APHA will become ever closer and will thus help to promote "world health," which remains the ideal common to both organizations.

The World Health Organization brings greetings to the American Public Health Association and wishes it another successful year.

Academy of Preventive Medicine

The New York State Academy of Preventive Medicine was established at an organization meeting in Buffalo during the 82nd Annual Meeting of the American Public Health Association. About 30 Diplomates of the American Board of Preventive Medicine in the state agreed upon the desirability of establishing an academy in order to strengthen the status of preventive medicine. V. A. Van Volkenburgh, M.D., was elected temporary chairman with power to appoint Constitution and By-Laws and Nominating Committees. These committees are to report and permanent organization is to be completed at the next meeting, to be held in conjunction with the New York State Medical Society in May, 1955. All Diplomates of the American Board of Preventive Medicine living in New York are eligible for Founder Membership if their applications are received prior to the May meeting.

Similar academies are already in existence in four states—Florida, North and South Carolina, and Tennessee.

Membership application blanks and further information may be obtained from Dr. Van Volkenburgh, 353 Broadway, Albany, N. Y.

Credit Lines

The Journal cannot furnish copies of items mentioned in Credit Lines. Please send requests to the addresses given.

Today's Focus in Tuberculosis

The New York State Committee on Tuberculosis and Public Health has prepared for its affiliates "Guide Lines in the Light of Events in Tuberculosis Control." Here are outlined the present-day emphasis on public information and education, intensive case finding and follow-up, and rehabilitation. The public should not be allowed to fall into the fallacy of believing tuberculosis is on the early way out because of the new drugs, the new surgery, and the closing of an occasional private tuberculosis hospital. Following a military principle, it suggests that rather than "disarmament after a major victory" armaments against tuberculosis must be maintained to prevent a regrouping and new assault by enemy forces. This statement has value on a much wider front than upstate New York for which it is designed. New York State Tuberculosis and Health Association, 105 East 22nd St., New York 10.

Guidance and Health Challenges

"Challenges Galore in '54 for Guidance and Health," is the title of the Coordinated Conferences on Guidance, Personnel Services, and Health Education held during the 1954 summer session at the University of Wisconsin. The three keynote speeches, summaries of 10 group discussions, and some of the highlights from the final general session are given. The conferences were held under the auspices of the state departments of health, public instruction, and vocational and adult education, the university, and two state counseling associations. The report is edited jointly by Warren H. Southworth, Dr.P.H., chairman of the university's education department, and Desmond O'Connell, program chairman of the Wisconsin Association of Educational and Vocational Guidance. Kramer Business Service, Gay Building, Madison, Wis., $1.

A First in Sharing

The National Tuberculosis Association announces that the Darlington County (S.C.) Tuberculosis and Health Association is the first of its more than 3,000 local associations to answer the appeal for voluntary contributions to the association's grant-in-aid program. At the beginning of 1954, the 50th anniversary year of NTA, the managing director, James E. Perkins, M.D., challenged the financially strong associations to aid their less fortunate neighbors and thus help meet total tuberculosis control needs. (NTA Bulletin, Jan., 1954, p. 5.) Darlington County's $100 contribution is the first answer to that challenge.

NTA has given grants-in-aid to state and local associations with special problems and limited finances since 1944. In the 10-year period nearly half a million dollars was granted to state and local associations in 17 states and Puerto Rico. Some of the earlier grants were made for improving facilities and services in official agencies; recent grants have been almost exclusively for employing professional help in state and local associations. Grants of $55,500 are proposed for 1954–1955 to help state or local associations in 10 states

and Alaska and Puerto Rico. Beginning with the current year, it is the hope that a part of the funds will be allocated by local associations.

Round the World with WHO

"Brother for Me" is a personalized story of some of the facts and impressions that Professor Nathan Sinai gathered in his two years as consultant on planning and evaluation to the general director of the World Health Organization. He tells some of the dramatic stories of the results that have come from WHO-aided operations. For example, DDT has changed a million acres of a malaria death trap in a section of India into a food-producing area. Again, in the Volta River area of the African Gold Coast, the development of electric power, bauxite mines, and aluminum plants wait upon the control of the little Simulium fly that transmits onchocerciasis, or "river blindness" as the inhabitants call it. The protein deficiency disease, kwashiorkor, needs for its control not only food production but a change in food habits. In a generation, perhaps, the author suggests, the combined technical knowledge and efforts of nutritionists, agricultural experts, anthropologists, and educators may begin to defeat kwashiorkor.

Professor Sinai, who directs the Bureau of Public Health Economics at the University of Michigan School of Public Health, takes his title from Dr. Albert Schweitzer's "Ethics for Twentieth Century Man" who tells the philosophy of a primitive tribe. When an ambulatory patient is asked to help a bedridden patient, the help is given if the two are members of the same family and if not rejected with "This brother not for me." WHO represents its opposite; all the peoples of the world are "Brother for Me."

"Brother for Me" was published in the May, 1954, Michigan Alumnus Quarterly Review and has been reprinted with its own cover. It is a moving and illuminating story highlighting the inseparable triad of health, social progress, and economic development.

Answering the Puzzling Questions

The Wisconsin State Board of Health has recently published "It's Up To You," which is described as "Facts for all individuals and groups who are interested in full-time county health departments." It is further reported to "have been prepared in response to the many questions that have come from community leaders who are interested in the development of full-time county health departments." It answers 16 of the usual questions that such leaders might have, such as, what are the states' public health needs, what kind of local health organization do we now have, what is a full-time county health department, what services may one expect from it, what will it cost, what are the obstacles to setting one up, how does a county go about setting one up, and does Wisconsin have a plan?

This pamphlet is a model for other states that have the need for something like it. It should be widely used and widely adapted to the special needs and situations of many states. A brief, highly selective bibliography of resource materials is not the least of its values. In single copies it is undoubtedly available from the Wisconsin State Board of Health, Madison.

Tuberculosis Society Consolidation

In Pennsylvania two recent consolidations of tuberculosis societies illustrate a growing trend toward county or district tuberculosis associations to match a similar trend in official health jurisdictions.

The Pennsylvania Tuberculosis and Health Society announces that North-

umberland County (population 117,000) is now covered by two tuberculosis societies, each with a full-time paid executive. Previously, there had been five associations, only two of which had full time executives. These two associations now serve the entire county. The consolidation took place, says the report, primarily because the societies (with no paid staff) realized that the tuberculosis program would be furthered by the services of a full-time trained executive secretary.

Another recent consolidation is represented by the Cambria County Tuberculosis and Health Association which serves the county's entire population of about 210,000, where previously there was a Johnstown City Society and a County Society.

In this connection, the National Tuberculosis Association recently completed a study of consolidations of local tuberculosis associations. Some districting was found in 21 states, with 67 district and area associations and plans covering 321 counties. The types of organization vary widely from actual district associations with a single board, budget, program, and staff to the cooperation of a number of associations in certain elements of a program, in the employment of an executive, in providing consultant field service, among others. But one-third of the total are actual district organizations with a unified program. The report indicates that in one state "where the district tuberculosis associations encompass the same area as the district health units, the opportunities for improving and expanding tuberculosis facilities in the district health unit had been markedly increased."

The report, "A Survey of Organization on a District and Regional Basis by Voluntary Tuberculosis Associations," as well as further information, is available from Director of Program Development, National Tuberculosis Association, 1790 Broadway, New York 19.

Public Health Services to Doctors

"Directory of Services for Physicians," the final issue of the Quarterly Bulletin of the New York City Health Department, is to be commended for two reasons. First, the department is to be congratulated that it has listed conveniently the services that the department offers the practicing physician by way of consultation, epidemiologic service, laboratory services, and many others. This is something other health departments might do with profit.

The other significant fact is that the quarterly, now 21 years old, is being discontinued. In its stead will be an annual directory of department services available to the physician. News of changes in the Sanitary Code, in public health practice, and new services available to physicians will be furnished to County Medical Society bulletins which have agreed to publish the information. The reason, "We know that the busy practitioner finds it impossible to read even a fraction of the literature that reaches his desk in the daily mail. So we decided to be practical."

The department is to be congratulated on a willingness to look at its activities critically, even those that have been done just that way for 21 years—or even longer.

Annual Reports

"For All of These . . . Health Tomorrow" is the 36th annual report of the Cincinnati Public Health Federation. It is an effective black and white job. In short paragraphs and simple illustrations, it manages to tell a lot about what the federation is doing to promote the health of the people of Cincinnati. Bleecker Marquette was the executive secretary.

"The Imperial Story," the 1953 annual report of the California Tuberculosis and Health Association is an unusual way of presenting an annual report. The story of the Imperial County Tuberculosis and Health Association, one of 58 local tuberculosis associations in California, is told as typical of activities in the state and of the relationship between state and local associations. Besides which, it gives an opportunity for mentioning some of the more dramatic situations, such as the large body of migrant Mexican laborers in the Imperial Valley and the special tuberculosis problem they represent. California Tuberculosis and Health Association, 130 Hayes St., San Francisco 2.

Worth Acquiring

"Emotions and Physical Health" is said to be the "first full-fledged effort in the field of mental health by the Metropolitan Life Insurance Company." It is a simple and straight-forward explanation of what is meant by a psychosomatic disease—that it is neither unreal or imaginative, nor to be cured by medicine alone. The explanations are made clear by such homely phrases as "a load on his chest," "too much to swallow," "more than I can stomach," and others, and indicating that they represent fact as well as imagery. The little pamphlet, imaginatively and humorously illustrated, might well be in any health education kit. Metropolitan Life Insurance Company, One Madison Avenue, New York 10.

"Refuse Collection and Disposal: A Bibliography, 1951–1953," is a supplement to an earlier bibliography on the same subject which covered articles published during the period 1941–1950. The articles deal not only with various methods of refuse collection and disposal, but also with the laws and ordinances on the subject and with costs. The present supplement, PHS Publication No. 402, and the earlier bibliography, Publication No. 9, thus represent a 13-year index of articles on this subject. The bibliography was prepared by the Interstate Carrier and General Engineering Program of the Division of Engineering Resources, Public Health Service, Washington 25, D. C. Free.

The Natural History of a Crime and a Rejuvenation is the annual report of the chief justice of the New York City Court of Special Sessions. The subject of "how and why people get into trouble and the parts played by delinquent and society both in precipitating the crime and in reversing the morbid process to achieve health" is told in terms of an actual case history. The important point is that neither crime nor the rehabilitation of the offender are solely his, but society's as well.

. . . "Today's youth needs reassurance that the basic attitudes of adults—the power groups of society—are humanly friendly and cooperative within the established areas of responsible behavior. . . . Society's readiness to receive those healed of their moral infirmities back into the community, must be counted among our most important instruments of moral regeneration."

Irving Ben Cooper is the chief justice. The report is available in single copies from the Court of Special Sessions of the City of New York, 100 Centre St., New York 13.

Books and Reports

All reviews are prepared on invitation. Unsolicited reviews cannot be accepted.

The Vitamins. Chemistry, Physiology, Pathology (Vol. I).—Edited by W. H. Sebrell, Jr., and Robert S. Harris. New York: Academic Press (125 East 23rd St.), 1954. 676 pp. Price, $16.50.

This is the first volume of a comprehensive three-volume text on the vitamins—very comprehensive, indeed, if one is to judge from the present work. It covers just four vitamins in four long chapters: vitamin A and carotenes, ascorbic acid, vitamin B_{12}, and biotin. It is indexed by authors and by subjects. The treatment of each vitamin is divided into nine or more sections under such headings as chemistry, industrial preparation, biochemical systems, biogenesis, estimation, occurrence in foods, effects of deficiency (in different species), pathology, pharmacology, and requirements (of different species). This plan of organization, with each individual section written by an author or authors with special knowledge and competence, makes for a very complete and satisfactory presentation of our present understanding of the vitamins. Each section abounds with references to original articles and reviews. The editors state in their preface that they have sought to give special emphasis to the chemistry and physiology of the vitamins, while devoting less space to such subjects as clinical vitamin deficiencies, their treatment and methods of vitamin assay which are covered in other current monographs. This reviewer found the sections on the chemistry, the industrial preparation, and the biochemical systems of the four vitamins of considerable value and interest.

A. Hughes Bryan

Survey of Food and Nutrition Research in the United States of America 1952–1953—Prepared by Food and Nutrition Board, National Research Council, Washington, D. C.: Gov. Ptg. Office, 1954. 372 pp. Price, $1.75.

This is a report of the third survey of food and nutrition research in the United States, previous reports having been published in 1948 and 1950. The present survey was made and the report prepared by the Food and Nutrition Board of the National Research Council under contract with the U. S. Department of Agriculture's Agricultural Research Service.

This current survey lists more than 4,800 research projects which were active during part or all of the period between July 1, 1952, and June 30, 1953. Projects have been classified and listed under the following headings: Nutritional Requirements, Digestion and Metabolism, Nutrition and Disease, Nutritional Status, Analytical Methods and Bioassays, Enzyme Chemistry, Food Composition and Nutritive Value, Factors Influencing Nutritive Value, Microbiology, and Food Acceptance and Nutrition Education. An innovation in this report is the section on "Titles for Suggested Research" in which approximately 250 new or unsolved problems are listed. The report includes a register of personnel and organizations engaged in the research projects.

Although the report was intended primarily for research workers and administrators in the food and nutrition fields as a means of communicating on problems of mutual interest and as an aid in the avoidance of duplication of

effort, it is of real value to public health workers.

The detailed classification of subject matter is such that the report serves as a ready reference for the public health worker who wishes to be kept informed of current problems and progress toward their solutions.

The section on Digestion and Metabolism illustrates this point with its 15 subject headings, including such items as: amino acids and proteins, lipides, enzyme effects, hormone effects, antimetabolites and interrelations, growth factors, and tissue biochemistry. The section on Food Technology includes the following subheadings, chemical additives, engineering methods and equipment, developmental research (in all food groups), and processing and storage. ALICE H. SMITH

Principles and Practice of Antibiotic Therapy—By Henry Welch and collaborators. New York: Blakiston (575 Madison Ave.), 1954. 699 pp. Price, $12.00.

This volume represents the most complete and up-to-date text available for information in the field of antibiotic therapy. Welch and his collaborators are to be congratulated on the production of what will be of value both to the research worker and to the practitioner. This volume is not merely a reprinting of the original volume of 1951. It is greatly expanded to include both new developments and a more detailed review of the use of antibiotics in certain specialized fields by 16 associate editors who are authorities in their own specialties. As might be expected, the chapters are of unequal value. Some certainly must be criticized as representing uncritical compilations of available literature rather than well balanced presentations based on mature judgment. If the volume is to be of real value to the busy practitioner, it should present the latter point of view rather than the former.

The authors and publishers have attempted to insure that the textbook will not be already out of date by the time of publication. Here, again, there is a difference between the chapters, some of which have no references to works published later than 1952 and based on work done perhaps a year earlier.

GEOFFREY W. RAKE

An Introduction to Bacterial Physiology—By Evelyn L. Oginsky and Wayne W. Umbreit. San Francisco, Calif.: Freeman (549 Market St.), 1954. 416 pp. Price, Trade $7.25, Text $6.00.

The level of this textbook is set to bridge the gap between general bacteriology and graduate studies in bacterial physiology. Sections are devoted to bacterial anatomy, the factors controlling bacterial populations, the machinery and biochemistry of bacterial metabolism, the physiology of bacterial variation, and the capacity of the cell to adapt and survive in changing environments with a final chapter discussing virulence as a physiological problem.

Its clear and lucid explanations of the very complicated processes of bacterial physiology and biochemistry are presented in a most readable style and clarified by numerous illustrations. Although written as a text, this volume should be of interest to all bacteriologists who wish to extend their knowledge of bacterial physiology. EDMUND K. KLINE

Impairment Study 1951—Society of Actuaries. Chicago, Ill. (208 S. La Salle St.), 1954, 300 pp. Price, $7.50.

This report summarizes the latest comprehensive intercompany investigation of mortality among insured persons with various types of medical impairments. Twenty-seven companies representing

about 70 per cent of ordinary insurance in force in the United States and Canada on December 31, 1950, participated in the study, which covered the experience of more than 725,000 policies, or about 630,000 persons.

The investigation included the experience under ordinary insurance issued during the years 1935 through 1949 for the most part, although for certain impairments data are shown separately for the experience of policies issued during the period 1946 through 1949. Information also is shown for the mortality experience of pregnant women during the first policy year only.

Mortality data are presented for about 140 classes of impairments which have been arranged in nine broad groups—diseases of the cardiovascular system, metabolic diseases, etc. Mortality is expressed as the ratio of observed to expected deaths. The computation of expected deaths is based upon a basic mortality table computed from intercompany experience under standard medically examined ordinary policies.

Each section has a summary showing mortality ratios for each impairment, followed by detailed tables and a brief discussion and interpretation of the data. The detailed tables show for policies classified separately by age at issue and duration of policy, the number exposed to risk, number of actual deaths, number of expected deaths, and the mortality ratio. Whenever the data are numerically adequate, mortality ratios for separate causes of death are shown.

The limitations of the study are pointed out in the text. The data have been well organized and clearly summarized. Whenever relevant, comparisons are made with corresponding data from clinical studies. Although the generalization of the findings of this investigation to the general population is subject to many qualifications, this book presents data unavailable in any other form.

It merits the careful study of all persons interested in the effect of medical impairments on longevity.

HAROLD F. DORN

Public Administration Organizations: A Directory, 1954—Edited by Frank B. Cliffe (7th. ed.). Chicago, Ill.: Public Administration Clearing House (1313 East 60th St.), 1954. 150 pp. Price, $2.50.

This directory of unofficial organizations in the field of public administration in the United States and Canada lists over 700 agencies. More than 500 are United States national organizations, nearly 150 are regional, such as the Southern Regional Educational Board, and nearly 70 are Canadian-wide organizations.

The first group is made up of organizations of or for public officials and administrators, professional and technical societies, and citizen organizations. For these 500 organizations interested in public administration and the problems of government, information is given on membership, finances, secretariat, activities, affiliations, and publications. For the other two groups only addresses and secretariat are given.

This directory should prove to be a useful source of information for public officials and others concerned with governmental problems.

MARTHA LUCINBUHL

Into the Freezer and Out—By Donald K. Tressler, Clifford F. Evers and Barbara Hutchings Evers (2d ed.). New York: Avi Publishing (31 Union Sq.), 1953. 246 pp. Price, $3.75.

This book is replete with practical advice for those interested in the freezing preservation of foods for family consumption. One helpful chapter describes the preparation of foods for the freezer, step by step, for all vegetables, fruits, juices, meats, fish, and dairy products commonly used.

The various types and sizes of home freezers, their use and care, and proper use of freezer space are discussed. Advice is given on packaging with illustrations of recommended types of packages.

Other subjects treated are the recommended storage temperature and length of storage, the freezing of cooked foods, and the preparation of frozen foods for the table. The precautions to be observed in thawing and cooking to avoid loss of food quality are cited.

Many recipes appear throughout the book with suggestions for using "gourmet" foods, frozen salads, frozen sandwiches, ice creams, and even sportsmen's game. Hints are also given regarding frozen storage of miscellaneous items, such as coffee, ice cubes, spices, fruit purées.

A planting and harvesting guide is given for homegrowers. The yields of frozen vegetables and fruits from fresh products are listed, and a vegetable cooking time chart is given.

This book should be helpful to those embarking on a program of home freezing.

B. E. PROCTOR

Microbiology of Meats—By Lloyd B. Jensen (3rd ed.). Champaign, Ill.: Garrard Press (119–123 West Park Ave.), 1954. 422 pp. Price, $6.00.

The first edition of this important book appeared in 1942 followed by a second in 1945. The present edition represents a thorough revision of the material in the second edition with a rearrangement of subject matter which adds greatly to the logical presentation of the vast amount of information developed by the author and his colleagues in the Research Laboratory of Swift and Company and by other investigators throughout the world. Among the chapters the following subjects are discussed:

Cured Meats and the Effects of Curing Ingredients on Bacteria in Meat
Bacteriology of Green Discolorations in Meats
Comminuted Meats (Sausage)
Microbiology of Beef and of Bacon
Microbial Aspects of Ice, Freezing, and Freezer Storage
Action of Microorganisms on Fats
Chemical Tests for Sanitary Quality
Bacterial Spores and Canned Meats
Gaseous Fermentation in Meat Products by the Genus Bacillus
Storage of Canned Meats and Packaged Meats
Bacteriology of Spices, Sugar, Paper, and Wood

The introductory chapter dealing with the historical aspects of the subject will be extremely useful to those who are not familiar with the early beginnings of this branch of food technology.

A number of the tables which appeared in the second edition have been revised by condensing the data without impairing their value. The text throughout indicates a careful checking of the available literature. The book is singularly free from typographical and other errors.

The author is so eminent in his field of meat microbiology that this new edition of his book is one which is a "must" for all workers interested in the various problems dealing with the handling and preservation of meats and meat food products. The text is well arranged, is well written, and it is easily read. The index is effective. Of special interest to public health workers is "A Summary of Bacterial Food Poisoning and Care of Foods." This new edition is a welcome addition to our available books on food topics.

F. C. BLANCK

Voluntary Medical Care Insurance: A Study of Non-Profit Plans in Canada—Ottawa, Canada: Research Division, Department of National Health and Welfare, 1954. 208 pp.

This is a factual presentation of the development and present status of the voluntary or nonprofit medical care insurance plans operating in Canada. It is well documented by available tables

and charts and permits an interesting comparison with related plans operating in the United States of America. It does not attempt to evaluate the programs, make recommendations for further expansion, or prognosticate the future.

About 16 per cent of the Canadian population were enrolled in some form of nonprofit medical care insurance plan in 1953, compared to about 17 per cent coverage in the United States. (Hospital insurance is not included in this survey.) However, the prevalence of comprehensive contracts among the Canadian plans is quite striking. Forty-seven per cent of the covered population, or 7.5 per cent of the total population, had such contracts, compared to figures of 14 per cent and 2.4 per cent in the United States, respectively. The comprehensive policy covers a wide range of medical benefits, including physicians' calls in home and office, specialist consultations, x-ray and laboratory services, in addition to medical, surgical, and obstetrical care in hospitals.

It is of interest that nine of the 14 existing plans offer service benefits and only five are limited to indemnification. Comprehensive contracts are offered only by the service plans, most of which are sponsored by medical associations and all of which are approved by the profession. On the other hand, the nonprofit indemnification plans have developed without physician sponsorship. They account for almost 92 per cent of the limited insurance coverage.

The usual problems of extending voluntary medical care insurance have been encountered by the Canadian plans, such as reaching the self-employed and farm workers or other persons working in groups too small for group enrollment, covering the retired and elderly, maintaining coverage for persons leaving their groups or moving to other areas, and providing uniform coverage for employees of nation-wide industries. The last two problems have been approached through the formation of Trans-Canada Medical Plans which serves as a coordinating body responsible for interplan relationships, as well as for research and promotional activities of national interest. The first two have been approached by one plan through enrollment of large numbers of persons in community or school district groups.

Although the Canadian picture appears to be following a pattern similar to that found in the United States, the study is a valuable contribution to the available material on this important subject. The writing is generally quite readable, although occasional abrupt changes in reference points, such as shifts from one year's data to another and from monthly to annual figures, cause occasional trouble. These are, of course, attributable to limitations of available data regarding certain items. There is excessive use of footnotes and much of this material could have been incorporated into the text to allow for easier reading. I. JAY BRIGHTMAN

Water Supply and Waste-Water Disposal—By G. M. Fair, J. C. Geyer, and J. C. Morris. New York: Wiley (440 Fourth Ave.), 1954. 973 pp. Price, $15.00.

This volume by Professor Fair of Harvard University and Professor Geyer of the Johns Hopkins University has a chapter on water chemistry by John C. Morris of Harvard. The authors have divided their book into 30 chapters, each dealing with a particular phase of water supply or waste-water disposal. It is not possible to discuss the many topics covered and therefore it is necessary to give illustrations of the way certain topics have been treated. Sedimentation and flocculation of water and sewage are discussed in one chapter.

In most instances the mathematical tools that can be used in solving prob-

lems and making designs relative to sanitary engineering are presented in sufficient detail with accompanying examples. This makes the book very satisfactory for a text to be used in certain graduate student classes or as a reference book for consulting engineers. A 30-page chapter on statistical analysis is included which gives methods and applications for analyzing vital records of population change, measurements of water consumption and sewage flow, observations of hydrological phenomena, results of water and sewage analyses, records of plant performance, and cost data of all kinds. The authors have compiled a wealth of information in such a way as to make the reader realize that he is reading about the most recent mathematical tools that can be applied in solving specific problems in the fields of hydraulics, hydrology, and sanitary engineering. DON E. BLOODGOOD

Protozoology—By Richard R. Kudo (4th ed.). Springfield, Ill.: Thomas (301–327 East Lawrence Ave.), 1954. 966 pp. Price, $10.75.

In this fourth edition the author has extensively and thoroughly revised an already excellent text. It is enlarged by 188 pages and the addition of 40 new figures and the reference lists have been materially improved. The book admirably maintains the author's original aim in setting forth "introductory information on the common and representative genera of all groups of both free-living and parasitic Protozoa" for seniors and graduates in zoology in colleges and universities. However, public health workers, investigators, laboratory diagnosticians, and others with interests in protozoology will find it an unusually good source for basic knowledge on the ecology, morphology, physiology, reproduction, variation, and heredity of the Protozoa and on methods for their collection and study. As would be expected of a book of this type, the clinical phases of protozoan infections are but briefly dealt with and it therefore does not meet the needs of the practitioner. As judged by the reviewer, this book is today's best in its field and is a credit to both the author and the publisher.

DONALD L. AUGUSTINE

The Challenge of Our Times—A Digest of Twenty Professors of the University of Wisconsin—Edited by Farrington Daniels and Thomas M. Smith (2nd printing). Minneapolis, Minn.: Burgess Publishing (426 So. Sixth St.), 1954. 356 pp. Price, $3.50.

Under discussion are the most important factors involved in the making or avoiding of the next and probably the last world war. No tinted glasses are in evidence. No sure-fire panacea is offered. This is not just another book of many on our present world turmoil glibly presenting one person's views on salvation. Solidly on the contrary, this is a heady summary by 20 experts of the subject matter they fletcherized annually and progressively for 12 years before an increasing number of critical participants. The compilation was achieved in 28 chapters divided into five major divisions. The book is hard reading, but also hard to lay aside. It has a ring of authority, but it savors neither of pomposity nor of infallibility. Apparently the team of authors was so concerned over the present world mess that they each played the full 60 minutes in screening out their respective shares in the total summary.

The whole undertaking started as an experiment. In 1941 at the University of Wisconsin a course was begun on "Contemporary Trends in Science and Social Problems." Various other descriptive course titles were used—"Contemporary Trends in Modern Civilization," and "A Course in Science and Human Affairs as Seen by Twenty Professors at the University of Wisconsin."

Just starting another university course is nothing unusual, for that happens in every large institution on the slightest or no provocation. But this course was different and very much needed. It dealt with the most important question of the day—whether Man would prove himself ingenious enough to survive in this increasingly complex world, or whether he would perish by his own inventions.

During the first few years the course was limited to all seniors in all the various colleges of the university. As numbers grew and interest developed outside the university proper, it became one of the most appreciated series offered by the School of the Air of the state radio station. Finally, and inevitably, this record of a most successful venture is being presented in book form.

Subjects in the following fields were discussed: history, sociology, political science, philosophy, agriculture, genetics, botany, chemistry, anthropology, trade, journalism, economics, bacteriology, and geography. Riding herd on a brilliant array of professiorial talent was the chemist who triggered the original suggestion of such a course. For this he paid the obvious penalty. He was appointed the chairman of the Curriculum Committee and eventually the editor of the book under review. Professor Farrington Daniels also wrote six of the 28 chapters.

The five parts of the book are: Science is Everybody's Business (9 chapters); Nations in Turmoil (8); Our World Community (3); What the United States Can Do (4); and What We Can Do (4). The thousands of possible references on 28 subjects have been condensed to two pages listing only 38 titles of suggested supplementary reading. Thoughtfully included also are six pages of "Who's Who" describing the authors.

Who might well read this splendid compilation with profit? All those who were depressed by Spengler's "Decline of the West." All those who believe the rest of the world is willing to accept United States handouts under various titles, but unwilling to accept United States leadership. All who believe Man may be a smart hombre at inventing useful and deadly devices, but a dumb cluck at getting along with his neighbors in the world. Specifically, for its health angles and implications, the book should be required reading in every school of public health and for every health office, no matter what kind. W. W. PETER

The Meaning of Social Medicine—By Iago Galdston. Cambridge, Mass.: Harvard University Press for the Commonwealth Fund, 1954. 137 pp. Price, $2.75.

Fascinating, though in parts rather difficult reading, this whole book is essentially a multidimensional definition and defense of what the author calls "social medicine." He achieves this by presenting historical comment at several crucial stages in the development of medicine and public health, plus the added dimension of trends over time. Thus, he achieves a perspective in presentation that will delight and stimulate any thoughtful student. Incidentally, some knowledge of medical history is almost essential to fully appreciate his early chapters.

The peak of the author's argument and reasoning is achieved in the middle chapters (III and IV) on Etiological Medicine and on the Epidemic Constitution. From the background of these chapters Galdston then takes the position that the time has come for much more serious concern with the nonspecific factors, such as the role of social and physical environment in affecting health status and even epidemic disease and for appropriate reforms in the education and training of physicians with this new emphasis in view.

In his espousal of this approach the

author does not give the problem of methods of inquiry and research in social medicine the attention that they deserve. The extreme difficulty of definitive study in the origin and control of illness of subtle and multiple causation may well explain the lag between the concept leading to the establishment of the first chair of social medicine at Oxford some 12 years ago and the seeming paucity of specific results that Galdston deplores.

Nevertheless, Galdston's challenging argument deserves wide reading—especially by those inclined to epidemiology. From this may arise a new look and vigor in public health research.

EDWARD S. ROGERS

Building the Board—By Harleigh B. Trecker. National Publicity Council for Health and Welfare Services (257 Fourth Ave.), New York, 1954. 109 pp. Price, $2.00.

Voluntary health agency executives will find much of value in this book, since they will undoubtedly agree with the author's treatise that the highly important job which board members are called upon to do calls for careful selection of the members.

Such questions are discussed as how board membership is decided, creating the nominating committee, how it goes about its work, helping people to decide whether they want to serve, starting new board members, and continuing the training of older ones. The various procedures found valuable by 96 agencies in various fields throughout the country are presented.

At times the agency executive may feel that the author is being idealistic, but he gives sound reasons for his suggestions and illustrates by the actual experiences of some of the agencies surveyed. The book can well serve as a guide and pattern to agency executives, as well as board presidents and chairmen of nominating committees in their task of building a better board and thus strengthening their agencies.

MURIEL BLISS WILBUR

The Microtomist's Formulary and Guide—By Peter Gray. New York: Blakiston (575 Madison Ave.), 1954. 794 pp. Price, $10.50.

The first quarter of this book deals with the art of making microscopic slides by some 16 processes. The general principles and technical steps of each process are discussed, followed by a detailed description of the author's method of making a typical preparation.

The remainder of the volume is devoted to the presentation of some 3,500 specific formulas and methods, classified so as to bring similar methods and formulas together. The author, the date first published and the source reference for each is given, and usually the technic by which it is used. A decimal system of reference numbers makes cross-references easily followed in running down a given type formula or technic.

The book should prove of great value to the laboratory worker who wishes to obtain information on rarely used staining formulas and technics or who wishes to delve into the history of the development of any staining procedure.

EDMUND K. KLINE

A Thousand Families in Newcastle Upon Tyne—By James Spence; W. S. Walton; F. J. W. Miller; and S. D. M. Court. New York: Oxford University Press (114 Fifth Avenue) 1954, 217 pp. Price, $3.00.

This is the first report on a long-term study of the illnesses and home environment of over 1,000 children born in 1947 in Newcastle by the late Sir James Spence and his pediatric staff at the University of Durham and by the Public Health Department of Newcastle. The authors have succeeded admirably in their purpose to provide teacher, practitioner, and student with a description

of illness and of environmental influence as seen by the general practitioner and the public health nurse.

The first half of the book describes the general pattern of illness during the first year of life. The infant mortality in this postwar year was 44; the authors present evidence that an objective of about 20 deaths per 1,000 live births is reasonable. A definite social gradient was noted in the infectious illnesses.

The description of the environment includes data on housing, on maternal capacity to "cope," on family structure, social status, and health services. The mother's capacity to cope, in the authors view, was the chief single factor in the infant's welfare.

The chapters on illegitimacy present the surprising information that 63 of the 67 illegitimate children were taken into a family circle and that this was accomplished by adoption in only 12 cases. Despite this fact, the general outlook for the child born out of wedlock was quite unfavorable. The chapter on medical care brings out some of the vast differences in the patterns of health service between Britain and the United States.

The conclusions are provocative and merit careful consideration from medical educators and those concerned with public health nursing.

PAUL A. HARPER

Housing Rehabilitation: An Administrative Guide for Community Action—Prepared by the Massachusetts Department of Public Health, Division of Sanitary Engineering (State House) Boston, Mass., 1954. 34 pp.

State and local health officers and their staffs will welcome this brief guide to practical ways of establishing or strengthening a program of slum control and prevention. Designed to assist local boards of health in Massachusetts, the clear exposition of the legal and administrative bases for this specially expanded type of preventive and corrective nuisance abatement activity can certainly be helpful in any area of the country, whether urban or rural.

Samuel B. Kirkwood, M.D., state commissioner of public health of Massachusetts in his introduction establishes the challenge that has been too long ignored: "Slums are a menace to community health in the broadest sense of that term . . . the first responsibility for the correction of unhygienic housing conditions is laid at the doorstep of the local board, or department of health. . . ."

There is a detailed review of the matter of state and local laws applicable to housing. Tenement house laws, the building code, and the fire, electrical, zoning, and planning laws are discussed in connection with the type of housing problems that are common and with effective methods of handling them. Special mention is made of the publication, "Minimum Standards of Fitness for Human Habitation," adopted by the Massachusetts Department of Public Health and the "Proposed Housing Ordinance," compiled by the American Public Health Association. Rehabilitation on a neighborhood basis is described fully with emphasis on the need for active coordination of many official departments in local government, supported by community agencies and an educational campaign.

HUNTINGTON WILLIAMS

Seventy-Five Years of Medical Progress, 1878–1953—Edited and with a Foreword by Louis H. Bauer, Philadelphia, Pa.: Lea and Febiger (600 Washington Square), 1954. 286 pp. Price, $4.00.

This book is a result of the First Western Hemisphere Conference of the World Medical Association which was held in Richmond, Va., in April, 1953, to commemorate 75 years of medical

progress. Representatives of 19 specialties, as well as a general practitioner, were invited to contribute papers on the recent development and current status of their respective medical fields. The book is a compilation of these papers. Not unexpectedly in a work of this type the individual papers are uneven in quality. Furthermore, since the authors are not historians, many of them have concentrated on the present status of their fields and have paid less attention to their development. Finally, the presentation as a whole is biased by the emphasis given to surgery and surgical specialties, as indicated by the fact that 11 chapters out of 20 are devoted to these areas. By contrast one chapter of 14 pages is devoted to preventive medicine and public health. This chapter was contributed by the late Dean James S. Simmons of the Harvard School of Public Health.

As a result this volume does not present a balanced picture of the development of medicine during the past 75 years, but rather a picture of what leading figures in various specialties regard as significant contributions and trends in these areas of practice. There is no effort at a synthesis. Proctology receives as much space as public health and the subjects are arranged not in any logical relationship to each other, but rather in alphabetical order. In addition, there are some curious omissions. Thus, in the chapter on thoracic surgery the pioneer work of Ferdinand Sauerbruch is referred to only indirectly on the basis of a paper published in the J.A.M.A. in 1908. His name does not occur in the text of the chapter nor in any reference made to the original publications in which he first described his methods and operations.

Within the limitations indicated, the reader will find numerous points of interest. The subjects covered are anesthesiology, dermatology, general practice, internal medicine, neurological surgery, obstetrics and gynecology, ophthalmology, orthopedic surgery, otorhinolaryngology, pathology, pediatrics, physical medicine, plastic surgery, preventive medicine and public health, proctology, psychiatry, radiology, surgery, thoracic surgery, and urology. The printing and production of the book are good.

GEORGE ROSEN

Books Received

Listing in this column acknowledges the receipt of books and our appreciation to the senders. Space and the interests of readers will permit review of some, but not all, of the books listed.

BODY STRUCTURE AND FUNCTIONS. Elvira B. Ferris and Esther G. Skelley. Albany, N. Y.: Delmar, 1954. 126 pp.

CITY PLANNING AT YALE. A SELECTION OF PAPERS AND PROJECTS. Edited by Christopher Tunnard and John N. Pearce. New Haven, Conn.: Graduate Program in City Planning, Department of Architecture, Yale University, 1954. 86 pp. Price, $1.50.

BIOLOGY OF ANOPHELES GAMBIAE. RESEARCH IN FRENCH WEST AFRICA. WHO Monograph Series No. 9. New York: Columbia University Press, 1954. 173 pp. Price, $2.00.

CONGENITAL SYPHILIS. David Nabarro. Baltimore, Md.: Williams and Wilkins, 1954. 470 pp. Price, $10.00.

CULTURAL DIFFERENCE AND MEDICAL CARE. Lyle Saunders. New York: Russell Sage Foundation, 1954. 317 pp. Price, $4.50.

DISTRIBUTION OF DENTISTS IN THE UNITED

States by State, Region, District and County. Chicago, Ill.: American Dental Association, 1954. 62 pp.

Executive Responsibility in Voluntary, Community Social Welfare Organizations. Ray Johns. New York: Association Press, 1954. 258 pp. Price, $4.00.

Fluoridation as a Public Health Measure. James H. Shaw, Editor. Washington, D. C.: American Association for the Advancement of Science, 1954. 232 pp. Price, $4.00 to AAAS members; $4.50 retail.

Facts About States for the Dentist Seeking a Location. Chicago, Ill.: American Dental Association, 1954. 34 pp.

Health of Regionville, The. What the People Thought and Did About It. Earl Lomon Koos. New York: Columbia University Press, 1954. 177 pp. Price, $3.25.

Health Yearbook 1954. Edited by Oliver E. Byrd. Stanford, Calif.: Stanford University Press, 1954. 325 pp. Price, $4.50.

How to Influence Public Policy. Elizabeth Wickenden. New York: American Association of Social Workers, 1954. 39 pp. Price, $.25.

Laboratory Technics in Rabies. WHO Monograph Series No. 23. New York: Columbia University Press, 1954. 152 pp. Price, $4.00.

Map of Explored Areas of Arthropod-Borne Viral Infections (Yellow Fever and Dengue Excepted). New York: American Geographical Society, 1954. Price, $1.25.

Modern Diagnosis and Treatment of the Minor Venereal Diseases. Orlando Canizares. Springfield, Ill.: Thomas, 1954. 131 pp. Price, $3.75.

Nation Looks at Its Resources, The. Report of the Mid-Century Conferences on Resources for the Future. Washington, D. C.: Resources for the Future, 1954. 418 pp. Price, $5.00.

Needed Research in Health and Medical Care. A Bio-Social Approach. Cecil G. Sheps and Eugene H. Taylor. Chapel Hill, N. C.: University of North Carolina Press, 1954. 216 pp. Price, $5.00.

Occupational Health and Safety Legislation. Public Health Service Publication No. 357. Washington, D. C.: Gov. Ptg. Office, 1954. 315 pp. Price, $1.25.

Our Needy Aged. A California Study of a National Problem. Floyd A. Bond, et al. New York: Holt, 1954. 401 pp. Price, $6.00.

Parents and Delinquency. A Report of a Conference. Edited by Helen L. Witmer. U. S. Department of Health, Education, and Welfare. Washington, D. C.: Gov. Ptg. Office, 1954. 43 pp. Price, $.20.

Pharmakotherapie Des Fiebers. R. Isenschmid, et al. New York: Intercontinental Medical Book Corp., 1954. 360 pp. Price, $7.00.

Problems of Infancy and Childhood. Transactions of the Seventh Conference March 23–24, 1953. Milton J. E. Senn, Editor. Packanack Lake, N. J.: Josiah Macy, Jr. Foundation. 1954. 196 pp. Price, $2.75.

Planning Florida's Health Leadership—Florida's Doctors at Mid-Century. Gainesville, Fla.: University of Florida Press, 1954. 110 pp. Price, $1.50.

Practical Nursing Procedures. Ruth V. Bien. Albany, N. Y.: Delmar, 1954. 288 pp. Price, $2.50.

Renal Function. Transactions of the Fifth Conference October 14–16, 1953. Stanley E. Bradley, Editor. Packanack Lake, N. J.: P. O. Box 575, Josiah Macy Jr. Foundation, 1954. 218 pp. Price, $3.75.

Role of the Pituitary in Cancer, The. Henry K. Wachtel. New York: William-Frederick Press, 1954. 31 pp. Price, $2.00.

Treatment of Acute Poliomyelitis. William A. Spender (2nd ed.). Springfield, Ill.: Thomas, 1954. 134 pp. Price, $3.75.

What Progress Against Mental Illness? Washington, D. C.: National Mental Health Committee, 1954. Unpaged.

Tuberculosis in Ireland. Report of the National Tuberculosis Survey (1950–53). James Deeny, Director. Dublin, Ireland: Medical Research Council of Ireland, 1954. 301 pp. Price, 15/–.

Vitamins, The. Vol. III. Chemistry, Physiology, Pathology. W. H. Sebrell, Jr., and Robert S. Harris. New York: Academic Press, 1954. 665 pp. Price, $15.00.

When Minds Go Wrong. John Maurice Grimes. New York: Devin-Adair, 1954. 246 pp. Price, $3.50.

Sandoz Atlas of Haematology. Basle, Switzerland: Sandoz Ltd., 1952. Bound together with text section 10" x 11½" loose-leaf binder. Price, $7.00.

A Selected Public Health Bibliography with Annotations

To Fill the Ranks—Working jointly, the National Health Council and the Equitable Life Assurance Society are entering upon a public health personnel recruitment campaign in the nation's high schols. Advisory Committees of the National Vocational Guidance Association and the National Association of Secondary School Principals are helping out. Promotional materials and the adopted program are scheduled for mid-winter. This seems to be an activity to which many more agencies might contribute with benefit to themselves and the country.

ANON. Promoting Health Careers: A National Project to Alert High Schools. Pub. Health Rep. 69, 10:945 (Oct.), 1954.

First of a Series—Briefly reported upon, as a starter, are the MCH programs of the Connecticut and the Hartford Health Departments which are supported by special committees of the State and County Medical Societies and the State Dental Society, together with voluntary public health agencies. That the combined programs contribute to the superior maternal and child health conditions of that state—far above the national averages—is inferred.

ANON. A Study of Maternal and Child Health Care in the United States. J.A.M.A. 156, 10:1012 (Nov. 6), 1954.

New Twist to Old Story—To the long list of papers dealing with the epidemiologic approach to the control of gonorrhea one is added which presents profitably the variables in case-finding usefulness between the repeater and non-repeater patient. You may want to know about the discussed gonorrhea "speed zone" project.

ANDERSON, D. O., and NELSON, A. J. Observations on the Applied Epidemiology of Gonorrhea. Canad. J. Pub. Health 45, 9:381 (Sept.), 1954.

"The Happy Moron"—At a meeting of the (British) society of MOH, the audience heard an entertaining discussion of the mentally border-line child and his education—a subject that has not been conspicuously aired at public health assemblies on this side of the water, in so far as the published records offer any evidence. However far afield this subject may seem to you the paper is well worth looking up.

BACON, L. J. "Educability." Pub. Health 68, 2:20 (Nov.), 1954.

Catching 'Em Early—In New York City questions about the dates of the first prenatal visit and the first blood test are asked on the birth certificate. To what use the answers can be put in planning public prenatal care programs is the burden of this provocative analytic study.

BAUMGARTNER, L., et al. Prenatal Care in New York City, 1951. Pub. Health Rep. 69, 10:937 (Oct.), 1954.

Old Enemy Still with Us—We are not being realistic when we airily brush off communicable diseases as public health problems of the past. We still have plenty of them and they could be much better cared for and much more could be done to prevent them than in the ways we are now treating and preventing them. Better preparation for dealing with them is the crux of the problem, says the author.

CARROLL, L. D. Problems in Acute Communicable Disease Control. Nursing Outlook 2, 11:593 (Nov.), 1954.

Childhood's Top Killer—Children can be taught by their parents to do safely all the things they want to do

that they are capable of doing. Forethought, time, and discipline are the essentials. The public health job is to alert, persuade, and guide parents in matters of their educational responsibilities. What are we waiting for?, the writer asks impatiently.

DIETRICH, H. F. Prevention of Childhood Accidents. J.A.M.A. 156, 10:929 (Nov. 6), 1954.

Practical Prophylaxis—From the health worker's viewpoint the chief interest in this discussion is the preventive use of gamma globulin in measles and poliomyelitis—with an added reminder of the current low estate of natural immunity to diphtheria in infants "due to the success of past preventive campaigns against that disease."

KARELITZ, S. Prophylaxis and Treatment of Measles, Diphtheria and Poliomyelitis. New York State J. Med. 54, 20:2831 (Oct. 15), 1954.

No Observable Physical Effect—Two Texas towns, similar in geography, racial composition, and occupation, but widely dissimilar in the fluoride content of the water supply—one much too high—one too low—were the scenes of some convincing studies. The medical histories since birth of typical samples of residents of each town (of 15 or more years of age) were reviewed and then the participants were examined by a medical-dental team. The only physical effect of the high fluorine content water upon the long-time users was the usual effect upon their teeth. Once again, those who want to be certain about the safety of water fluoridation will be reassured, and those who make capital out of fanning fluorine phobias will continue as in the past uninfluenced by mere facts.

LEONE, N. C., et al. Medical Aspects of Excessive Fluoride in a Water Supply. Pub. Health Rep. 69, 10:925 (Oct.), 1954.

Restaurant Service Ware—If you have been wondering about the sanitary qualities of the plastic plates and cups used in some public eating places you will be reassured by this study. It finds them to be about as satisfactory from the sanitizing standpoint as glass or chinaware when cleaned in approved dish washers. Don't be satisfied with this offhand comment—read the paper.

MALLMANN, W. L., et al. Studies on the Cleaning and Sanitizing of Melamine Plastic and Vitreous China Dinnerware. Modern San. 6, 10:20 (Oct.), 1954.

Revealing Statistic—Two-thirds of the responding city school superintendents reported that it was the local practice to allow children to go, during school hours, to private dentists for needed care. In one state there is a law on the subject; in another there is a formal state policy, "according (them) the same privilege as that enjoyed by children . . . who attend clinics. . . ."

MENCZER, L. F. National Practices in Release of Children During School Hours to Receive Private Dental Care. Research Quart. 25, 3:320 (Oct.), 1954.

Sage Advice—"You must visit with the people. If the product you have to sell is a worth while product, they will buy it. And when they buy it, it belongs partly to them. They now have a . . . pride in creation, and they are going to fight like the very devil if they see it jeopardized." This quote is from a 1954 National Health Forum address.

MURPHY, F. D. The People Can Solve Their Problems. Med. Social Work 3, 4:133 (Oct.), 1954.

From Our Annual Meeting—"Altman has estimated that in New York City some forty thousand children are exposed each year to psychotic teachers. . . . It was estimated for 1952 that there would be 32,443 new teaching graduates to fill 160,000 vacancies. . . . 'The only practical and effective way to increase the mental health of a nation is through its school system' (quoting Jesse Taft).

. . . Perodic examinations of teachers, while not in wide use today, offer hope. . . ."

NEWMAN, H. C. Mental Hygiene in the Classroom. J. School Health 24, 8:207 (Oct.), 1954.

Humane and Economical, Too—Montefiore Hospital's home-care after hospital-care plan for cancer patients is described in working detail—covering medical, nursing, physiotherapy, and occupational therapy measures. In a five-year period 400 cancer patients have been cared for this way at a cost of about one-quarter of the cost of (ward) hospital care. More important, the patients like it better.

ROSSMAN, I. Treatment of Cancer on a Home Care Program. J.A.M.A. 156, 9:827 (Oct. 30), 1954.

Our "Females" Do Better—A quick-acting antidote for our "healthiest country in the world" bragging is this brief look at mortality statistics here and abroad, as revealed in broad age groups (for years 1930 and 1950). "It may well be that our poor international standing at the older ages is related to the high proportion of overweight people in our population," is the parting shot.

SPIEGELMAN, M. Mortality Trends Here and Abroad. Statist. Bull. Metrop. Life Insur. Co. 35, 9:30 (Sept.), 1954.

If additional information is desired regarding the articles listed in this Bibliography, please communicate directly with the publications in which they appeared; the addresses are furnished for your convenience.

Canad. J. Pub. Health (Canadian Journal of Public Health), 150 College St., Toronto 5, Ont., Canada

J.A.M.A. (Journal of the American Medical Association), 535 N. Dearborn St., Chicago 10, Ill.

J. School Health (The Journal of School Health), American School Health Association, 3335 Main St., Buffalo 14, N. Y.

Med. Social Work (American Association of Medical Social Workers), 1834 K. St., N.W., Washington 6, D. C.

Modern San. (Modern Sanitation), 855 Avenue of the Americas, New York 1, N. Y.

New York State J. Med. (New York State Journal of Medicine), 292 Madison Ave., New York 17, N. Y.

Pub. Health (Public Health), Society of Medical Officers of Health, Tavistock House, South, Tavistock Sq., London W.C. 1, England.

Pub. Health Rep. (Public Health Reports), Gov. Ptg. Office, Washington, D. C.

Research Quart. (The Research Quarterly), American Association for Health, Physical Education, and Recreation, 1201 Sixteenth St., N.W., Washington 6, D. C.

Statist. Bull. Metrop. Life Insur. Co. (Statistical Bulletin Metropolitan Life Insurance Company), One Madison Avenue, New York 10, N. Y.

Association News

Dr. Press New APHA Field Director

The Executive Board of the APHA announces the appointment of Edward Press, M.D., M.P.H., as field director to succeed Roscoe P. Kandle, M.D., M.P.H., who is now deputy commissioner of health of New York City. Dr. Press joined the staff of the APHA on January 1, 1955, coming from the University of Illinois where he has been both associate director of the Division of Services for Crippled Children and assistant professor of preventive medicine at the College of Medicine. He is a graduate of New York University Medical College and has received an M.P.H. degree from the Harvard School of Public Health. Dr. Press has been certified both by the American Board of Pediatrics and by the American Board of Preventive Medicine. He has had experience in both state and federal public health work, having held positions with the West Virginia and Michigan State Health Departments and with the U. S. Children's Bureau. From 1942 to 1946 he served in the Army Air Force, rising from first lieutenant to major.

Dr. Press has been involved in a wide range of both public health and civic activities in the Midwest. He is the author of articles in pediatric, general medicine, and public health journals and was chairman of the Maternal and Child Health, Nutrition, and Public Health Dentistry Section of the Middle States Public Health Association. He also has served on several committees of the American Academy of Pediatrics and the National Safety Council. He was chairman of the Poisoning Control Committee of the Illinois Chapter of the American Academy of Pediatrics and in that position helped develop one of the first integrated Poisoning Control Centers in the country. He is also a member of the Mayor's Commission on the Chicago House of Correction and of the Board of Governors of the City Club of Chicago.

EDWARD PRESS, M.D. M.P.H.

Dr. Kandle Chairman of Administrative Practice Committee

The Executive Board has announced the appointment of Roscoe P. Kandle, M.D., M.P.H., as chairman of the Committee on Administrative Practice, succeeding Ira V. Hiscock, Sc.D., who became president-elect of the Association at the Buffalo Annual Meeting. Dr. Kandle, who is a Fellow of the Health Officers Section and who is certified by the American Board of Preventive Medicine, is presently deputy commissioner of health of the New York City Health Department. He formerly served the Association as field director under the Committee on Administrative Practice, during which service he directed the study of several departments of

health, including that of the State of Pennsylvania and the City of New York. Dr. Kandle also served recently as associate director of Community Research Associates, New York City.

The Committee on Administrative Practice, which was organized in 1920, has been served by five chairmen: C.-E. A. Winslow, Dr.P.H., Eugene L. Bishop, M.D., Henry F. Vaughan, Dr. P.H., Wilton L. Halverson, M.D., and Professor Hiscock.

Meetings of Affiliated Societies

Oklahoma—At the 14th annual meeting of the Oklahoma Public Health Association in Stillwater in November, a number of recommendations were adopted. Among these are the following:

1. That each incorporated community in the state enact a mandatory milk pasteurization ordinance.

2. That legislation be enacted establishing county boards of health and their functions and duties.

3. That the legislature in view of major reductions in federal grants-in-aid provide additional state funds to assure basic public health programs.

Officers elected are:

President—Marie Hazelton, R.N., State Health Department
Vice-President—Forest R. Brown, M.D., health officer, Hughes and Seminole Counties
Secretary—Marjorie Butler, records consultant, State Health Department.

The South Dakota Public Health Association met in Pierre on October 29. The program was built around the theme of school health with Donald Dukelow, M.D., of the Bureau of Health Education, making the keynote address. A panel on School Health Services followed with school and health leaders taking part.

The meeting, attended by more than one hundred persons, elected the following officers:

President—Marvin Whealy, executive secretary, South Dakota Public Health Association
President-Elect—Roscoe Dean, M.D., health officer, Jerauld County
Vice-President—Floyd Schenk, Yankton
Secretary-Treasurer—T. A. Evans, Pierre.

APHA membership application blank on page XXVII

EMPLOYMENT SERVICE

The following pages present information for those seeking public health personnel and for those seeking positions in public health.

This is a service of the Association conducted without expense to the employer or employee.

POSITIONS AVAILABLE

Public Health Director—Full time, for city of 30,000 population. Must be graduate of a recognized public health school. Salary $9,200 per year. Personal interview desired. Board of Health, Municipal Bldg., Middletown, Conn.

Public Health Physician—as health officer for an established county health department of 37,000 in northwestern Illinois. Salary of $10,000 minimum, plus travel allowance for qualified physician. President, Lee County Health Dept., 123 East First St., Dixon, Ill.

Public Health Physicians—Health officers for one urban, one county, and three multiple-county health departments in Illinois; retirement plan or Social Security; salaries according to training, experience, and performance record.

State position as **Assistant Chief**—Division of Local Health Services; salary range up to $860 per month; successful local experience and Board certification, or eligibility therefore, desired; civil service, retirement. Roland R. Cross, M.D., Director, Illinois Dept. of Public Health, Capitol Bldg., Springfield, Ill.

Public Health Engineer—Wanted immediately to head the staff of the Board for the Condemnation of Insanitary Buildings in Washington, D. C. Civil Service status $5,940–$6,940. Bachelor's degree required and experience in the field of public health engineering, preferably in housing. To serve as administrator of the board, direct its field activities in raising the standards of sanitation in substandard buildings, and coordinate the board's activities with other district agencies in the over-all housing program of the District of Columbia. E. Milton Dulin, Superintendent, Housing Division, Dept. of Licenses and Inspections, Room 5007, Municipal Center, Washington 1, D. C.

Public Health Engineer—$5,124. To direct section of environmental public health, including the supervision of 22 sanitarians. Applicants must have at least three years' experience at a comparable administrative level. Civil Service status. A. P. Bell, Engineer Director, Louisville and Jefferson County Dept. of Public Health, 240 East Madison St., Louisville 2, Ky.

Public Health Engineer—to head the sanitation activities in the Spokane County Health Department serving a population of approximately 75,000. Staff includes four sanitarians. Experience and training equivalent to a B.S. degree in engineering and two years of experience in public health engineering or sanitation required. Graduate degree may be substituted for a year of experience. $4,692–$5,580. Arthur E. Lien, M.D., Spokane County Health Officer, 819 North Jefferson, Spokane, Wash.

Health Educator—Male. $4,500–$5,100. In city-county health department for population of 600,000. Civil service. Geo. A. Denison, M.D., Health Officer, Birmingham, Ala.

Health Educators—Four vacancies; two state and two counties. M.P.H. degree and preferably some experience. $379–$459; $360–$440. Merit system, Social Security and state retirement. A. T. Johnson, Personnel Director, Oregon State Board of Health, P. O. Box 231, Portland 7, Ore.

Sanitarian—for general sanitation program in a health department serving a city of 77,000 population. $346–$389 per month, plus hospital and surgical insurance and pension benefits. Commissioner of Health, City Hall, Racine, Wis.

Registered Sanitarian—for a generalized community program at Barstow.

Public Health Nurses—for Barstow and 29-Palms. Must have California driver's license and be eligible for California certification as a public health nurse.

County Civil Service Office, 236 Third St., San Bernardino, Calif.

Sanitarian—for general program in rural county of 50,000. $3,600 with annual increases. Travel allowances. A. B. Mitchell, M.D., Director, Allegan County Health Dept., Allegan, Mich.

Sanitarian—to train native population in environmental sanitation on the Island of Guam. U. S. Civil Service form 57 directly to Dr. John E. Kennedy, Director, Medical Services, Government of Guam, Guam, Marianas.

Senior Medical Bacteriologist—with Division of Laboratories and Research, New York State Department of Health, Albany.

Responsibilities include immunologic studies of cancer. M.D. and internship. Two years' experience required. Open to citizens and noncitizens of the United States. $7,300–$8,890. Closing date for filing application February 18, 1955. New York State Civil Service Commission, Albany, N. Y.

Bacteriologist—$401–$456 per month. Responsible supervisory and professional work in large city hospital laboratory. A master's degree in bacteriology and considerable experience in a bacteriology laboratory or related fields. Experience in the appropriate field may be substituted for the master's degree. Under Municipal Civil Service. Dept. of Personnel, Room 235, Municipal Courts Bldg., St. Louis 3, Mo.

Serologist—to supervise serology section of a city health department laboratory with a university affiliation in upstate New York. B.S. or B.A. degree required with practical experience. Salary open based on training and experience. **Box L-42,** Employment Service, APHA.

Dental Hygienist—$50–$63 for 40-hour week. State residence requirement waived. Appointments may be made above the minimum. Vacancies exist in the State Department of Health and Welfare and state institutions. Maintenance at a reasonable rate available at most institutions, but residence at institutions not necessarily required. Maine State Dept. of Personnel, Chapel St., Augusta, Me.

Occupational Therapists—for physically handicapped children in California public schools and special state schools. $341–$415. Requires registration with National Registry of Qualified Occupational Therapists, or eligibility for such registration, and one year of supervised experience in occupational therapy. Apply before January 25 for civil service examination in February. State Personnel Board, 1015 L St., Sacramento 14, Calif.

Public Health Nurses—$355–$440. City of Los Angeles Health Department. Immediate jobs. Room 5, Los Angeles City Hall, Los Angeles, Calif., for details.

Public Health Nurses—Generalized program, county health department headquarters 17 miles west of downtown Detroit. Five-day week. $351–$381 per month. Located near University of Michigan and Wayne University. Amalia Krause, Director of Nurses, Wayne County Health Dept., 10 Henry Ruff Road, Eloise, Mich.

Public Health Nurse—For staff position in generalized program. Minimum requirements: one year of academic work in public health and two years' field experience under supervision. $290–$365. Merit system appointment. Must have automobile, seven and one-half cents mileage allowance. Director, Palm Beach County Health Dept., Box 29, West Palm Beach, Fla.

Nurse Director—Combined generalized nursing service with staff of 60. Accessible to university public health nursing program; field training center. Program includes bedside nursing, communicable disease control, maternal and child health, parochial schools, and industrial nursing. Beginning salary $7,000. Dr. Marguerite Booth, 713 Delaware St., Southeast, Minneapolis 14, Minn.

Public Health Nurse—Generalized program in Southern California county of 270,000 population. $337–$417. Three-week vacation. Car furnished or seven and one-half cents per mile. New health building under construction. Orange County Personnel Dept., 644 North Broadway, Santa Ana, Calif.

Staff Public Health Nurse—for generalized public health nursing service in a two-county district of the Upper Peninsula of Michigan. Accredited training area. Social Security. Must have own car. Salary depends upon qualifications. Wm. C. Harrison, M.D., Director, Delta-Menominee District Health Dept., Webster Annex, Escanaba, Mich.

Public Health Nurse—for staff duty in new expanding VNA. $3,600 with mileage allowance and Social Security. Miss Olive Hart, Nurse Director, Monterey Peninsula Visiting Nurse Association, 546 Dutra, Monterey, Calif.

Supervising Public Health Nurse—with degree. Small county health department. Two other public health nurses on staff. $4,200–$4,500. Car allowance. Dr. J. D. Heaslip, Director, Health Center, Hastings, Mich.

Executive Director, Virginia Tuberculosis Association, Richmond. Duties and responsibilities: full administrative responsibility for planning and execution of the program of the state association. Supervise and direct state association staff; develop relationships with local affiliates and with other voluntary and official state agencies. Qualifications: Graduation from an accredited college or university; must have served in progressively responsible work in an executive or staff capacity in a local tuberculosis association, or comparable experience. Preference given candidates who have held major responsibility for diversified program and organization work. Minimum $8,500 and participation in NTA annuity plan and social security. Selection Committee, Virginia Tuberculosis Association, 113 S. Third Street, Richmond 19, Va.

POSITIONS WANTED

Physician, M.P.H.—Age 39. Desires medical care administrative position in public health or welfare department. Interested in public assistance and medical care for medically needy. Experience in pediatrics, internal medicine, epidemiology, chronic illness, and rehabilitation in teaching institution and state-wide programs. Prefers Connecticut. **Box PH-48,** Employment Service, APHA.

Sanitary Engineer—Graduate, licensed, 30 years' broad experience in supervision of operation of water and sewage treatment plants as municipal operator, waterworks superintendent, and consulting engineer. Good statistical background. Age 53. Good health. **Box E-29,** Employment Service, APHA.

Bacteriologist—Ph.D. Fifteen years' experience in the pathogenic, immunology and antibacterial fields. Desires teaching and research position, or both, or connection with a health department. **Box L-43,** Employment Service, APHA.

Commercial Advertisements

All communications on the following commercial advertisements should be sent to Burneice Larson, Medical Bureau, Palmolive Building, Chicago 11, Ill.

OPPORTUNITIES AVAILABLE

(a) Medical director; student health department; university with enrollment of 4,000 students. (b) Public health physician to direct county health department; metropolitan area, Midwest; minimum $12,000. (c) Health educator; experience in restaurant sanitation, well qualified public relations; duties: conducting seminars, inservice training of health personnel; public relations in public health field; some traveling; prestige position. (d) Health educator; state health department; West. (e) Senior public health nurses; minimum two years' experience; Alaska. (f) Director, public health nursing service; six-nurse unit; university city, Southwest. (g) Public health physicians, nurses, health educators and sanitarians; foreign assignments.

OPPORTUNITIES WANTED

(a) Public health nursing administrator; M.P.H.; five years, consultant, state health department; four years, health coordinator, liberal arts college. (b) Public health physician; M.P.H.; Diplomate; nine years, director, city health department. (c) Health educator; M.P.H.; nine years, director, health education, metropolitan health department. (d) Statistician; M.B.P.H. (public health statistician) six years, statistician, state health department. (e) Public health engineer; M.S. (civil engineering); eleven years, health supervisor, metropolitan health department.

News from the Field

WHO News

Yugoslavia Water Pollution Seminar

At the fourth seminar of European sanitary engineers in April, 1954, the two main topics of discussion were river pollution and water disinfection. The seminar was held under the joint auspices of the Yugoslav government, WHO's Regional Office for Europe, and the Rockefeller Foundation. It discussed the relation of water pollution to disease and the methods and practices of chlorination in water disinfection. It stressed the prevention of pollution as more important than purification after pollution. Unless present trends are checked, purification plants will not be able to keep abreast of either increased pollution or increased demand for water disinfection resulting from increasing population and increasing industrialization. Edward J. Cleary, executive director of the Ohio River Valley Water Sanitation Commission, and M. B. Cunningham, superintendent, Oklahoma City Water Department, served as visiting lecturers for the seminar.

Proceedings of the seminar are in preparation for distribution at a later date.

The World Problem of Alcoholism

A joint meeting of WHO Expert Committees on Mental Health and on Alcohol was held at the Palais des Nations, Geneva, October 5–11. Drinking habits that vary greatly from country to country give rise to varying public health problems. In Anglo Saxon and Nordic countries where distilled spirits are consumed rapidly, the blackout phenomenon is frequently found with attendant industrial and traffic accidents, criminal behavior, increased exposure to venereal disease, as well as other medical and social consequences. In the wine and beer drinking countries where this blackout is relatively unknown and little overt drunkenness is seen, there are nevertheless serious physical disturbances such as cirrhosis of the liver. The report of the committee, now being prepared, is expected to suggest suitable curative and public health measures for the different types of alcoholism.

Eastern Mediterranean Group Meets

The first meeting of the Regional Committee for the Eastern Mediterranean since 1950 met in Alexandria in September. The group meeting constituted Subcommittee A, the Regional Committee having been divided into two subcommittees in order to bring about a resumption of intercountry discussions. At the time of the 1950 meeting, emphasis was upon survey and investigation of the health of the region's countries and only six projects were in operation, according to the report of the regional director, Dr. A. T. Shousha. Since then 40 projects have been completed, 57 are in current operation, and 16 others have been approved. Staff has increased from 49 in 1951 to 131 in 1954, of whom nearly one-third are working in tuberculosis control.

During the four-year period, 448 fellowships were awarded for study in other countries, through which doctors, nurses, sanitary engineers, and other personnel have received advanced instruction in public health administration and preventive health work.

For the five years 1951–1955, expenditures are estimated to be nearly 10 million dollars, three million from the regular budget and nearly four million each from UN Technical Assistance and UNICEF.

Charting a Dental Health Program

A group of consultants met in Geneva in September, 1954, to outline a realistic program of dental health improvement that could be undertaken by WHO within its limited resources. Because dental defects have been called the most widespread of man's ailments, the recommendations were drawn up at the request of the general director, Dr. M. G. Candau. The five chief problems dealt with are dental caries, periodontal diseases, irregularities of the teeth and jaws, hare lip and cleft palate, and oral cancer.

The chief recommendations made by the consultant group are for collection of basic information on the extent of dental disease, organization and administration of a dental health program, staff training, health education, and research.

Included in the group of consultants were two from the United States: Philip E. Blackerby, D.D.S., director of the Division of Dentistry, W. K. Kellogg Foundation, and J. W. Knutson, D.D.S., chief dental officer of the Public Health Service, who served as chairman.

Alaska Using Stateside Sanatoria

Announcement has been made in Washington through the Department of the Interior, Bureau of Indian Affairs, that three tuberculosis sanatoria in Washington State that are operating well below capacity will be used to house and treat Alaskan native tuberculosis patients, thus reducing the large waiting list.

Dr. Earl Albrecht of Juneau, commissioner of health of Alaska, has pointed out that a large waiting list of tuberculosis patients remains in spite of the recent opening of the new hospital in Anchorage in which about 400 beds are to be occupied. The problems of staffing large hospitals in Alaska are serious and the operation expensive. Dr. Albrecht pointed out that existing hospitals in the United States with staffs available and operating at less than capacity might substantially assist the Alaskan tuberculosis control problem. Accordingly, the arrangements were made with Washington State sanatoria and it is expected that 290 Alaskans can be transferred, the first 150 entering the Laurel Beach and Riverton Hospitals and the remainder going to Firlands. The patients will be transported by air in what is probably the largest movement of such cases undertaken by civilian agencies.

Realty Subdivisions and Planning

Proceedings of the 7th Florida Municipal and Public Health Engineering Conference, held at the University of Florida in March, 1954, in cooperation with the Florida State Department of Health, are now available. The problem of rapidly growing communities, particularly realty subdivisions, is presented as seen by three interested specialists—the newspaper editor, the county health department sanitary engineer, and the state sanitary engineer. Solutions to the problems were considered by various interested parties in community development, zoning boards, the water purveyor, the banker, the home builder and the community planner, among others. In a summary and conclusions, John E. Kiker, Jr., professor of civil engineering in the university, says, "Someone must somehow see that sanitary engineering becomes positively identified with the over-all problem of good planning and development."

"Community Planning and Development" constitutes the May, 1954, issue of Engineering Progress at the University of Florida, the monthly publication of the Florida Engineering and Industrial Experiment Station, Gainesville, Fla.

Identification of Social Components in Health Department Programs: A Guide Developed by the Social Service Staff, California State Department of Public Health

I	II	III	IV
ANALYZING the social needs of people in the community and the resources available as they affect the total public health program.	PLANNING programs with consideration of social factors in health department services and how people are affected by the ways in which the services are given.	MAINTAINING a public health program that recognizes and deals directly or indirectly with concomitant social problems.	INVESTIGATING through research psychosocial and economic factors related to the maintenance or breakdown of health and to the use of health facilities by such projects as:
A. Program Determination			
Who are the people mainly served by the health department? From what economic, national and racial groups do they come? To what health problems do these factors contribute?	Determining through evaluation by health department personnel what problems, such as resistance to care, exist in services (TBC, CCS, MCH) and determining whether solutions should be found within the health department and/or in cooperation with other agencies.	Carrying out policies and procedures in health department programs which consider basic needs of children and adults as well as individual and group differences, including staff and community education around these concepts.	Studying the use of health department facilities by various groups such as migrant, national, and ethnic.
B. Economic Factors			
Where can families and individuals served by the health department turn in times of financial stress? What are the prevailing community attitudes toward giving and receiving help? What are legislative and administrative policies and how are they interpreted?	Ascertaining how interpretations of special needs in relation to health should be done if economic deprivation or transiency is a major community problem and stringent policies are in effect.	Referring patients to agencies for financial assistance and having a continuing relationship with these agencies, bringing regularly to their attention case situations where restrictions aggravate public health problems, and encouraging appropriate referrals from these agencies.	Studying the incidence of a specific disease in relation to socioeconomic status.
C. Psychosocial Aspects			
What facilities (casework services, foster homes, day care, vocational rehabilitation, psychiatric, housekeeping, etc.) are available and how adequately are these provided? Are there gaps or duplications?	Considering, over and above financial assistance, what services people want, what seem needed, and what cooperation and leadership the health department can give in using or developing services having a bearing on the maintenance of health.	Helping individuals and groups served by the health department to use existing services, within or outside the health department, which best meet their health, social, and emotional problems.	Studying normal and premature births in relation to marital stability, planned or unplanned pregnancy, fear of childbirth, reasons for delayed or no prenatal care, etc.
D. Community Participation			
What are the working agreements and relationships between the health, social, and education agencies in the community?	Deciding with which agencies there is need to work on a continuing basis concerning referral procedures and cooperative services to people.	Bringing to the attention of the community the need for modification and extension of services and programs and reaching an understanding with agencies as to types of referrals and exchange of information that will be mutually helpful.	Studying cases to determine if there is a need for a proposed resource or if existing facilities are meeting current needs.

Elements of Tobacco Industry Study

The Scientific Advisory Board of the Tobacco Industry Research Committee, set up to study the relation of cigarette smoking to lung cancer, has announced that human lung cancer will be studied in 10 major medical centers in the United States and Canada. Such factors as geographic location of patients, length of residence, occupational history, habits, and associated diseases will be studied. Also planned are five research projects as follows:

Inhalation of smoke
Direct application of smoke tars
Study of lung and cardiovascular tissue
Habits and characteristics of smokers
Preparation and analysis of tobacco derivatives

These projects will be carried on under supervision of scientists in various universities and medical colleges of the country.

Criss Award to W. Earl Hall

The 1954 Mutual of Omaha Criss Award of $10,000 "to encourage and reward in a singular manner outstanding contributions to health safety" has been presented to W. Earl Hall of Mason City, Iowa. Mr. Hall, editor of the Mason City Globe-Gazette, has been active in promoting safety for nearly 30 years. He helped to organize the Mason City Safety Council, founded the Iowa Safety Council, and is on the board of the National Safety Council. Both in 1937 and 1941 Mr. Hall won the C.I.T. Safety Foundation's $500 award for newspaper safety editorials.

Residents of the United States and its territories are eligible for the awards. The chairman of the awards is Charles W. Mayo, M.D., of the Mayo Clinic. Among the other members are Surgeon General Leonard A. Scheele, Thomas Parran, M.D., Ned Dearborn, and William L. Lawrence. Nominations for the 1955 award should be mailed before March 1, 1955, to Chairman, Board of Judges, Criss Award, Mutual of Omaha, Omaha, Neb.

Perinatal Mortality Reduction

Wyman C. C. Cole, M.D., of Detroit, chairman of the American Academy of Pediatrics Committee on the Fetus and Newborn Infant, reports the latest move by the academy to get concerted local action throughout the country on the problem of perinatal mortality reduction. A major factor in this program is the improvement of the hospital care of newborn infants, particularly those who are premature.

Early in 1954, the academy published a revision of the manual "Standards and Recommendations for the Hospital Care of Newborn Infants—Full Term and Premature." Endorsed by such agencies and groups as the Children's Bureau, the Maternal and Child Health Section of the American Public Health Association, the American Hospital Association, and others, this booklet has had wide distribution over the past year. According to Dr. Cole, the time is now ripe to stimulate active and sustained efforts at the local level for implementation of its recommendations. Little resistance from either lay or professional groups is anticipated, but the academy has outlined some specific suggestions to help communities get started. They have been sent in the form of a circular letter to state and local Committees on the Fetus and Newborn Infant, and may be summarized as follows:

A. Organization of local committees—

These committees may be initiated by any one of several local groups, but should be composed of the professional disciplines concerned with the program, particularly obstetricians, pediatricians, hospital administrators, public health officers, nurses, general practitioners, and pathologists.

B. Appraisal of current status of newborn and premature infant care in hospitals of the area—

This is to determine how good or bad the care is, to locate hospitals that need to improve their methods, and to pinpoint the specific corrective methods needed. This involves, first, the obtaining of mortality statistics for full-term and premature infants from each hospital. Local public health agencies may be particularly helpful in gathering these data. Secondly, each hospital should be rated as to how well it meets the standards recommended in the Academy manual. This may be a self-evaluation by the hospital, or the survey may be conducted by a neutral professional group, including a local public health agency or the Joint Committee on Accreditation.

C. Institution of accurate statistical systems in all hospitals—

This will make possible in the future more accurate studies, and is one of the main projects for local committees to attack.

D. Conduct of educational training programs for professional persons—

Nurses, physicians, hospital administrators, and public health workers would be most concerned. Various types of programs are possible, from local seminars, institutes, or clinics to intensive training of key nurses in special premature centers.

E. Methods of obtaining cooperation from hospitals—

The great majority of hospitals are anxious to give high standard care, and improvements need not generally involve great expense. Success depends largely on demonstrating deficiencies, and offering tactful and constructive help in meeting them. Education and persuasion should, where possible, take precedence over coercion.

Association of Labor-Management Medical Care Administrators

According to Herbert K. Abrams, M.D., of Chicago, Ill., the Association of Labor-Management Medical Care Program Administrators was organized at a conference in Buffalo, N. Y., on October 11, 1954. The new organization, of which Dr. Abrams is secretary, will bring together the medical and lay administrators of medical care programs sponsored by labor unions or labor-management health and welfare funds.

The association's chief objectives will be the study and sharing of experiences of the various labor health programs and the promotion of standards for high quality medical care. It will provide opportunity for the interchange of ideas and the discussion of mutual problems. Professional consultation to unions and union-management groups will be offered. At its first meeting some 50 persons attended, representing medical care programs of unions in the AFL, CIO and UMWA, as well as health service plans from which labor-management health funds purchase their care.

The newly elected executive board of the association is composed of the following: president, Morris Brand, M.D., medical director, Sidney Hillman Health Center, New York City; vice-president, Frank Guidotti, M.D., medical director, Hotel Trades Health Center, New York City; secretary-treasurer, Herbert K. Abrams, M.D., medical director, Union Health Service, Inc., Chicago.

Keep America Beautiful, Inc.

The public health philosophy of prevention is now to be applied to the growing American problem of litter. A new nonprofit organization known as Keep America Beautiful, Inc., has been formed to carry on a sustained program of education aimed at the prevention of litter along the highways, in parks, on beaches, and elsewhere. Pledges of financial support have been received from a large sector of American industry, and some 30 national nonprofit organizations have named representatives to an advisory council. These organiza-

tions include the garden clubs, the youth organizations, professional societies, outdoor groups, and other civic interests. Two unique features will distinguish the KAB program, according to the announcement—one, that it is a sustained, year-round program, and, two, that its efforts will be dedicated to the prevention of litter rather than to sporadic clean-up campaigns of the kind that have been emphasized in this area in the past. Its program envisages assistance to these organizations and the development of and assistance to statewide organizations such as the new organization recently formed in Maryland called Keep Maryland Beautiful. Homer N. Calver is a member of the Management Committee that originally set up and now manages the new organization.

A New Journal in Antibiotics

Antibiotic Medicine, described as "a monthly journal of clinical studies and practice of antibiotic therapy and as a companion journal to Antibiotics & Chemotherapy," begins publication this month. Contributions are invited by its editor, Henry Welch, Ph.D., chief, Division of Antibiotics, U. S. Food & Drug Administration, and associate editor, Felix Marti-Ibanez, M.D., president of MD Publications, which is publishing the new Journal for Antibiotics Medicine Publications. The journal includes a section in which all articles of the month are abstracted in Spanish.

Annual subscriptions entered before January 15, $7.50; thereafter $15; for subscribers to Antibiotics & Chemotherapy, $5.

Joint U. S.-Canadian Conference

Two organizations that have long been conducting research on occupational chest diseases are jointly sponsoring a conference on silicosis and occupational chest diseases. To be held in Town Hall, Saranac Lake, N. Y., February 7–9, 1955, the two agencies are the McIntyre Research Foundation of Toronto and the Saranac Laboratory of Saranac Lake. The five full sessions will include papers reporting on original research work conducted by either of the two sponsors as well as papers by guest lecturers.

Anthony J. Lanza, M.D., emeritus professor of industrial medicine, New York University-Bellevue Medical Center, is chairman of the conference and of the scientific program committee. Doctors, scientists, and businessmen concerned with the problems of occupational chest diseases in the United States, Canada, and foreign countries are invited to attend. Reservations and other arrangements are being handled by Norman R. Sturgis, Jr., Saranac Laboratory, Saranac Lake, N. Y.

Cooper Memorial Health Building

A new building for the North Carolina Health Department was dedicated in Raleigh on September 25 as a memorial to George Marion Cooper, M.D., organizer of the Sampson County Board of Health in 1911. Later he became first part-time and then full-time health officer of the county. In 1915 he joined the staff of the State Board of Health, remaining for 35 years. He served as director of every division except laboratory and engineering, but chiefly as director of maternal and child health. He pioneered in typhoid immunization, rural sanitation, school health and oral hygiene clinics, infant and maternal mortality studies, school tonsil and adenoid clinics, crippled children program, and birth control programs.

The George Marion Cooper Memorial Building of six stories is the first to be constructed specifically for the health department. At its entrance are the Cooper bronze bas-relief and plaque. These Cooper bronzes were purchased

with voluntary contributions from public health workers and others throughout the state.

Sanitation Guide for Circuses

The California State Department of Public Health, in cooperation with the California Conference of Local Health Officers, has prepared a brief "Sanitation Guide for Fairs, Circuses, Carnivals" for the guidance of the operator of such activities. It should also be useful to health department sanitarians involved in their sanitary supervision. Included is a self-inspection form for rating the food concession, which is available separately. California State Department of Public Health, 760 Market Street, San Francisco 2.

American Dental Association Meets

The American Dental Association held its 95th annual meeting in Miami, Fla., November 8–11, 1954. At this meeting, the Division of Dental Health Education of the Council on Dental Health was raised to the status of a bureau. Perry J. Sandell, director of the former division, continues as director of the bureau.

Among the recommendations relating to public health made by the House of Delegates are:

1. Constituent dental societies are urged to take leadership in securing appropriations of state funds for dental health programs and to foster the appointment of capable dental health directors and the establishment of a sound administrative position for state dental units.

2. The evaluation of a dental care program should be based on the program's ability to provide dental services to all its participants in terms of financial resources, competent personnel, and consistently high standards of service.

3. Dental societies are encouraged to provide information and guiding principles to labor unions that wish to organize dental care programs.

4. Children's "Dental Health Day" will be extended to "Children's Dental Health Week," beginning in 1955.

5. Constituent societies are urged to provide leadership in developing state and community plans for dental care and rehabilitation of the chronically ill and for providing dental care for nonambulatory patients in institutions and homes.

6. Constituent societies should initiate action to insure that adequate provision is made for dental facilities in the chronic disease hospitals and related facilities to be constructed under the Medical Facilities Survey and Construction Act of 1954.

Daniel F. Lynch, D.D.S., of Washington, D.C., was elected president to succeed Leslie M. Fitzgerald, D.D.S., of Dubuque, Iowa.

Meeting at the same time was the American Association of Public Health Dentists which elected the following officers:

President—Fred W. Wertheimer, D.D.S., chief, Public Health Dentistry Section, Michigan State Department of Health

President-Elect—F. M. Erlenbach, D.D.S., director, Division of Dental Hygiene, Connecticut State Department of Health

Secretary—Roy D. Smiley, D.D.S., director, Dental Division, Indianapolis State Health Department

PERSONALS

ELIZABETH BALCOM, medical social worker, Cattaraugus County (N.Y.) Health Department, has resigned due to illness.

JESSE R. BARNET, former research assistant on the Kellogg Foundation's community studies project at Harvard, has succeeded RAY H. EVERETT,* retired, as executive secretary of the District of Columbia Social Hygiene Society, Washington, D. C.

WILLARD H. BAUMANN, former industrial hygienist, Carbide and Chemical Company, Oak Ridge, Tenn., has been appointed to the newly created post of industrial hygiene engineer, Jones and Laughlin Steel Corporation, Pittsburgh, Pa., as a step in the corporation's expanding program of preventive medicine.

MARY E. BEAM, R.N.,† executive director, Delaware County (Pa.) Public Health Nursing Service and president, Pennsylvania State Nurses Association, has resigned to

* Fellow.
† Member.

further her studies at the University of Pennsylvania, Philadelphia.

FRANK R. BRADLEY, M.D.,† director, Barnes Hospital, St. Louis, Mo., was installed as the new 1954–1955 president of the American Hospital Association at the association's annual banquet in the Grand Ballroom at the Palmer House on September 16.

LESTER BRESLOW, M.D.,* chief, Bureau of Chronic Diseases, California Department of Public Health, Berkeley, has been added to the Commission on Chronic Illness.

ROSCOE C. BROWN, D.D.S.,* chief, Special Programs Branch, Division of Public Health Education, Public Health Service, Washington, D. C., retired on October 31 after 40 years of active service in public health, 30 of which have been with the Public Health Service.

NADEENE BRUNINI has been appointed public health nutritionist, New Jersey State Department of Health, assigned to the Central Health District in Trenton.

C. P. CHUMLEY, M.D., has been named director, Grady County (Okla.) Health Department.

JOHN F. CONLIN, M.D.,* director of medical information and education, Massachusetts Medical Society, has been appointed medical director, Hospital Department, City of Boston and superintendent, Boston City Hospital, a post recently created as part of the reorganization of Boston's Hospital Department.

DOVER A. DICK, M.D., who has just completed a reserve tour of duty with the United States Air Force, is a regional medical consultant with the Division of Local Health Services, Kentucky State Health Department, serving Nelson, Spencer, Bullitt, and Larue Counties.

CAROLYN DOLAN, formerly with the Tennessee State Department of Health, is now dental hygienist, Kentucky State Department of Health, Louisville.

FRANK J. DONAHUE,† executive secretary of the Cambria County (Pa.) Tuberculosis and Health Association, has resigned to become an associate in the Personnel and Training Division, National Tuberculosis Association, New York City.

SARAH VANCE DUGAN, director of the Division of Foods and Drugs, Kentucky State Department of Health, Louisville, has resigned after 35 years' service.

EDGAR S. EVERHART, M.D., chief, Venereal Disease Division, Pennsylvania Department of Health, Harrisburg, retired on October 1, 1954, after 30 years of service.

LEWIS H. HOWARD, M.D.,† director, Tucson-Pima County Health Unit, Arizona, has retired after 34 years of service.

DOROTHY E. LAWSON, former director of medical social service, U. S. Naval Hospital, Philadelphia, Pa., has been appointed to direct the newly initiated medical social service in the Tuberculosis Section, Philadelphia Department of Public Health.

DONALD LAWRENCE, M.D., has succeeded the late A. A. NICHOLS, M.D., as Fargo, N. D., health officer.

DAVID B. LEE,* director, Bureau of Sanitary Engineering, Florida State Board of Health, Jacksonville, has been elected the 15th president of the Federation of Sewage and Industrial Wastes Associations, at its 27th annual meeting in Cincinnati in October.

CONSTANCE R. LINDSAY, formerly with the Boston Visiting Nurse Association, is now staff nurse, Quincy (Mass.) Health Department, succeeding ANNE SMITH.

VERNON W. LIPPARD, M.D., dean, Yale University School of Medicine, is the newly installed president of the Association of American Medical Colleges, succeeding STANLEY E. DORST, M.D., dean, University of Cincinnati College of Medicine. ROBERT A. MOORE, M.D., vice-chancellor, Schools of the Health Sciences, University of Pittsburgh, is president-elect.

MAY MCMILLAN,† former nutritionist, Washington County (Md.) School Health Program, is now nutrition consultant, Greater New York Program of the National Dairy Council, New York City.

MATTHEW F. MCNULTY, JR.,† assistant manager, VA Research Hospital, Northwestern University Medical Center, has been appointed professor of hospital administration and administrator of the 600-bed University of Alabama Hospital and Billman Clinics, Birmingham, Ala.

JAMES BRADSHAW MINTENER, former vice-president and general counsel of the Pillsbury Flour Mills Company, Minneapolis, has been appointed assistant secretary for federal-state relations in the Department of Health, Education, and Welfare, Washington, D. C., succeeding RUSSELL LARMON who resigned to return to his post at Dartmouth College, Hanover, N. H.

HENRY B. MULHOLLAND, M.D.,* assistant dean and professor of internal medicine, University of Virginia Medical School, Charlottesville, has been elected president, American Diabetes Association.

EUGENE H. PAYNE, M.D.,† clinical investigator, Parke, Davis and Company, Detroit, Mich., has received the 1954 national recognition award of the Marquette University School

* Fellow.
† Member.

of Medicine Alumni Association for his study of tropical diseases.

MAURICE L. PETER, M.D.,† former director, Okmulgee County Health Department, is now Oklahoma City-County health director, succeeding the late WALTER H. MILES, M.D., who had been with the City Health Department since 1919.

ELNA PERKINS,* director of health education, Norfolk County (Mass.) Health Association has resigned.

DONALD E. PORTER,† former executive secretary, Passaic County (N.J.) Tuberculosis and Health Association, is now program director, California Tuberculosis and Health Association, San Francisco.

DONALDSON F. RAWLINGS, M.D.,* formerly director, Division of Maternal and Child Health, has been appointed deputy director, Illinois Department of Health, Springfield, in charge of the Division of Preventive Medicine, newly created by the consolidation of the Divisions of Preventive Medicine and Maternal and Child Health.

ROBERT RENDUELES, public information officer, New York Office of WHO, and ROBERT MORSE, public information officer, Regional Office for the Western Pacific of WHO, have recently been transferred with Mr. Rendueles now in Manila and Mr. Morse now in New York City.

NINA RIDENOUR, Ph.D.,† secretary, Ittleson Family Foundation, New York City, has been appointed also as a consultant to the Yale University Child Study Center, New Haven, Conn.

ANNETTE RIORDAN, associate, Personnel and Training Division, National Tuberculosis Association, has resigned to become executive director, Hudson County (N.J.) Tuberculosis and Health League.

LEONARD S. ROSENFELD, M.D.,* former research associate, Columbia University School of Public Health, has been appointed to direct the United Community Services' study of medical care in Greater Boston.

J. SANTIVANEZ, D.V.M., M.P.H.,† left in November for a three months' circuit of Mexico, Central America, and South American countries in promotion of a new publication called Ciencias Veterinarias and for lectures on public health.

EARL J. SAUER, D.D.S.,† chief of the dental health program, Peoria (Ill.) City Health Department, which has been dropped because of lack of funds, has become public health dentist, Peoria County Health Department.

ADELE SCHLOSSER,† statistical field consultant, National Tuberculosis Association, New York City, resigned in August to enter the New York Hospital Nurse Training School. She has been succeeded by REGINA LOEWENSTEIN,* former chief, Statistics Section of a special committee set up by the National Research Council to study the medical problems of veterans.

LEONARD M. SCHUMAN, M.D.,* director, Division of Preventive Medicine, Illinois State Health Department, Springfield, has been appointed as associate professor of public health, University of Minnesota School of Public Health.

BETTY SHAFRAN, manuscript editor, Publications Unit, National Tuberculosis Association, New York City, has resigned to become articles editor, Everywoman. She is succeeded by MARY GRIFIN, formerly assistant editor, College Editorial Department, Scott, Foresman and Company, Chicago, Ill.

MAJOR GENERAL GEORGE CRAIG STEWART (Rtd.), former director, the Office of Military Assistance, Office of the Secretary of Defense, has been appointed to the newly created post of general manager, National Safety Council, Chicago, Ill.

MARTHA J. THOMASON,† who has for the past two years conducted dietary surveys in Ecuador for the Food and Agriculture Organization of the United Nations, is now public health nutritionist, Cook County (Ill.) Department of Public Health.

ROBERT S. WARNER, M.D., former director, Division of Graduate and Postgraduate Medical Education, University of Utah College of Medicine, Salt Lake City, has been appointed assistant medical director of the American Heart Association, New York City, with primary responsibility to develop the association's professional medical education program.

ELIZABETH C. WELLS, M.D.,* child hygiene physician, Bureau of Maternal and Child Hygiene, Connecticut State Department of Health, for the past 12 years, has retired to join her daughter in Venezuela.

MAX WILCOMB, Ph.D., biologist, Oklahoma State Department of Health, Oklahoma City, has resumed his duties after having completed academic work leading to his doctorate degree.

DEATHS

FREDERICK BETTELHEIM, M.D.,† radiologist, Washington Heights and Yorkville Medical Group of the Hospital Insurance Plan, New York, N. Y. (Medical Care Section).

* Fellow.
† Member.

LINN W. CURTIS, supervisor of vocation guidance and placement, United Cerebral Palsy, New York, N. Y., on October 15, 1954.

MAJOR GENERAL GEORGE C. DUNHAM (Ret.) USA,* on October 4, 1954 (Laboratory Section).

LESLIE W. FOSTER, D.D.S.,* dental officer, Talihina Medical Center, Bureau of Indian Affairs, Talihina, Okla. (Dental Health Section).

JOSE N. GANDARA, M.D.,† of Santurce, Puerto Rico, on October 12, 1954 (Health Officers Section).

ISAAC GONZALEZ MARTINEZ, M.D.,* president, Puerto Rico League Against Cancer, San Juan, Puerto Rico, on April 20, 1954 (Laboratory Section).

PAUL H. LEACH, M.D.,† assistant medical director, Richfield Oil Corp., Santa Monica, Calif. (Health Officers Section).

WALTER H. MILES, M.D.,* director of health, Oklahoma City Health Department, Okla., on August 31, 1954 (Health Officers Section).

PORTER L. MUSICK,† milk sanitarian, Georgia State Department of Health, on April 10, 1954 (Engineering Section).

LILLIAN B. PATTERSON, R.N.,† assistant professor, Division of Public Health nursing, University of Washington, Seattle, Wash., on September 8, 1954 (Public Health Nursing Section).

MARTIN B. SCHEUER, M.D.,† medical director, Clinton Medical Group (HIP) New York, N. Y., on June 4, 1954 (Medical Care Section).

LEWIS REYERS THOMPSON, M.D.,* formerly assistant surgeon general, U. S. Public Health Service, on November 13, 1954.

ANNA W. WILLIAMS, M.D.,* bacteriologist and retired assistant director, New York Health Department Laboratory, on November 22 at the age of 91 (Laboratory Section).

L. O. WILLIAMS, M.S.,† director, Division of Public Health Engineering and Sanitation, Wyoming State Department of Health, Cheyenne, on October 12, 1954 (Engineering Section).

CLARENCE E. YOUNT, M.D.,† city health officer, Prescott, Ariz., on March 10, 1954 (Health Officers Section).

CONFERENCES AND DATES

State and Regional Public Health Meetings:

North Dakota Public Health Association. Fargo, N. D. March 28–29.

Puerto Rico Public Health Association. February 3–5.

Texas Public Health Association. Buccaneer Hotel, Galveston. February 13–16.

Meetings of Other Organizations Coming in January, February, and March:

Child Study Association of America, Inc. Hotel Astor, New York, N. Y., March 28–30.

National Advisory Committee on Local Health Departments. Sloane House, New York, N. Y. January 24.

National Conference of Interstate Milk Shipments. Hotel Peabody, Memphis, Tenn. March 29–30.

National Congress of Tuberculosis and Silicosis. Mexico, D. F., Mexico. January 23–29.

National Health Council. Hotel Sheraton Astor, New York, N. Y. March 23–24.

National Society for Prevention of Blindness. Annual Sight Saving Conference. New York, N. Y. March 16–18.

U.S.-Canadian Conference. Town Hall, Saranac Lake, N. Y. February 7–9.

* Fellow.
† Member.

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*Burke, Carroll P., 1953, Food Engineering 25:47, 178-80, Sept. "New Bacteria Spotter."

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National Farmers Union, Denver, Colo.
New York Hotel Trades Council and Hotel Association Health Center, Inc., New York, N. Y.
Orkin Institute of Industrial Sanitation, Atlanta, Ga.
Oval Wood Dish Corp., Tupper Lake, N. Y.
Owens-Illinois Glass Company, Toledo, Ohio
Prudential Insurance Company of America, Newark, N. J.
Rip Van Winkle Clinic, Hudson, N. Y.
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